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REPORT ID**: 14284.00.T058.RP1**

Grand Renewable Wind Farm – Turbine T058
IEC 61400-11 Edition 3.0 Measurement Report

Prepared for:

Grand Renewable Wind LP
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4 February 2016 – Revision 1

Revision History

Revision Number	Description	Date
1	Issued test report	February 4, 2016

This report in its entirety, including appendices contains 65 pages.

Statement Qualifications and Limitations

This report was prepared by Aercoustics Engineering Limited in accordance with International Standard IEC 61400-11 (Edition 3.0, released 2012-11), "Wind turbine generator systems – Part 11: Acoustic noise measurement techniques". This report is specific only to the Wind Turbine identified in this report.

Aercoustics Engineering Limited shall not be responsible for any events or circumstances that may have occurred since the date on which the Wind Turbine was tested and/or this report was prepared, or for any inaccuracies contained in information that was provided to Aercoustics Engineering Limited. Further, Aercoustics Engineering Limited agrees that this report represents test data analysed as per the above described standard for the specific Wind Turbine described in this report, but Aercoustics Engineering Limited makes no other representations with respect to this report or any part thereof.

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This Statement of Qualifications and Limitations is attached to and forms part of this report.

Table of Contents

List of Figures

List of Tables

List of Appendices

1 Introduction

Aercoustics Engineering Limited (Aercoustics) was retained by Grand Renewable Wind LP ("GRWLP") to conduct an acoustic measurement of turbine T58 at the Grand Renewable Wind Farm. The purpose of the measurement was to provide verification of the maximum noise emission of the turbine. The measurement was carried out in accordance with International Standard IEC 61400-11 (Edition 3.0, released 2012-11), "Wind turbine generator systems – Part 11: Acoustic noise measurement techniques". This report is specific only to Turbine T58.

2 Wind Turbine Information

2.1 Wind turbine equipment specific information

Wind turbine specific equipment information for turbine T58 was provided by GRWLP and is summarized in Tables 1 – 5.

Table 1 - Wind Turbine Details

Wind Turbine Details	
Manufacturer	Siemens
Model Number	SWT2.3-101
Turbine ID	T58

Table 2 - Operating Details

Operating Details	
Vertical or Horizontal axis wind turbine	Horizontal
Upwind or downwind rotor	Upwind
Hub height	99.5 m
Horizontal distance from rotor centre to tower axis	3.5 m
Diameter of rotor	101 m
Tower type (lattice or tube)	Tubular
Passive stall, active stall, or pitch controlled turbine	Pitch controlled turbine
Constant or variable speed	Variable Speed
Power curve	See Appendix B.01
Rotational speed at each integer standardised wind speed	See Appendix B.02
Rated power output	2.126 MW
Control software version	14.04.30

Table 3 - Rotor Details

Rotor Details	
Rotor control devices	Pitch control
Presence of vortex generators, stall strips, serrated trailing edges	Vortex generators, Dino Tails, Winglet
Blade type	B49
Serial number	Blade A – 4902177301 Blade B – 4902122401 Blade C - 4902121501
Number of blades	3

Table 4 - Gearbox Details

Gearbox Details	
Manufacturer	Winergy
Model number	PEAB4456.8 cold climate 2.3MW
Serial number	W-100524

Table 5 - Generator Details

Generator Details	
Manufacturer	Loher
Model number	Generator Loher C3, SG V2
Serial number	6012795

2.2 Wind Turbine Location

Turbine T58 is located in the municipality of Haldimand near the town of Fisherville, approximately 630m north of Concession Rd 6, and 790m east of Haldimand Road 12. The area surrounding T58 is flat and consists primarily of farmland. There is a large forest directly north of the turbine.

A general layout of the area in which the turbine is located is provided in the site plan (Figure A.01).

3 Measurement Details

3.1 Measurement Equipment

3.1.1 Acoustic Measurement Equipment

A summary of acoustic equipment utilized by Aercoustics for the measurement of turbine T58 is summarized in Table 6.

Table 6 - Acoustic Measurement Equipment

Equipment	Manufacturer Name & Model	Serial Number
Acoustic Data acquisition system	LMS SCADA Mobile	22143211
Microphone	B&K 4189	2625416
Pre-amplifier	B&K 2671	2369794
Acoustic calibrator	B&K 4231	3012380

Calibration of the measurement setup was carried out before and after Aercoustics set of measurements.

3.1.2 Meteorological Equipment

Wind speed for Turbine ON was derived from the power curve (as per procedures outlined in IEC 61400-11). Wind direction for turbine ON measurements was utilized from the nacelle anemometer located at hub height (99.5m high) from turbine T58. Data for background measurements was obtained from a 10m high anemometer, which was placed as per guidelines outlined in IEC-61400-11.

The meteorological equipment is summarized in Table 7

Table 7 – Meteorological Measurement Equipment

Equipment	Manufacturer Name & Model	Serial Number
Anemometer	VAISALA WXT520	K4250007
Serial to Analog Converter	NOKEVAL 7470	A165164

3.2 Measurement Setup

3.2.1 Microphone Placement

The measurement microphone was setup 152m from the base of the turbine in ‘Position 1’, (i.e. downwind of the turbine, as per IEC 61400-11) at an elevation of 0m relative to the base of T58. The microphone was placed in the centre of a circular, acoustically reflective board.

During the measurement period only data points for which the microphone was within 15 degrees of downwind from the turbine were used. The microphone position relative to downwind of the turbine was monitored via the yaw angle output provided from the turbine

system (discussed further in Section 3.5). During placement of the microphone the turbine was parked and the reference yaw angle for that measurement logged.

When measurements of T58 were taken, the surrounding land was fallow, with the ground covered in knee-height plants. All plants surrounding the immediate vicinity of the microphone were removed so that the influence on the measurement was considered negligible. There were crickets and frogs in the plants surrounding the microphone, but their impact was also assessed to be negligible. There were no nearby reflecting surfaces (houses, barns etc.); as such the influence from reflecting surfaces was considered to be negligible.

Photos of the measurement setup are provided in Figure A.02, Appendix A.

3.2.2 Double Windscreen Setup

A double windscreen setup was not utilized.

3.3 Measurement Schedule

Table 8 provides a summary of the test date and times. Data was logged in 10 second intervals for post-processing (as per the measurement standard).

Table 8 - Measurement Schedule Summary

Date	Test Type	Start Time	Finish time
September 30, 2016	Turbine ON	12:26 pm	1:03 pm
	Background	1:09 pm	1:41 pm
	Background	1:46 pm	2:25 pm
	Turbine ON	2:30 pm	3:07 pm
	Turbine ON	3:14 pm	4:04 pm
	Background	4:08 pm	4:44 pm

3.4 Meteorological Conditions

Detailed meteorological data relevant to the measurement is provided in Appendix E.

As previously mentioned, wind speed for Turbine ON was derived from T58's power curve (as per the standard), while wind direction was provided by T58's nacelle anemometer (located at hub height). Background data was obtained from an anemometer located 10m above ground level near T58.

Temperature and pressure readings during the measurement period were provided by the 10m anemometer, located near turbine T58 for the duration of Aercoustics measurements.

3.5 Turbine operational information

Output data from the turbine (Power, yaw, RPM, pitch angle, and nacelle wind speed) were obtained as analog output signals that were simultaneously acquired with the acoustic and anemometer measurement data using Aercoustics data acquisition system.

4 Measurement Results

4.1 Deviations from IEC-61400-11 Edition 3.0

No deviations.

4.2 Special Notes & Considerations

There were no other turbines in the immediate vicinity of T58.

4.3 Analysis Details

The following section outlines analysis of the measurement data acquired for T58. The data presented is exclusive of transient events such as vehicle traffic, wildlife, air traffic etc. The site has been assessed to have a roughness length of 0.05m, representative of farmland with some vegetation.

4.3.1 Double Windscreen Adjustment

As previously mentioned, no double wind screen was used, as such the measurement data did not require adjustment.

4.3.2 Wind Speed Correction

The wind speed for each measurement data point for Turbine ON was derived through the power curve (as per Section 8.2.1.1 of IEC-61400-11). For data points during Turbine ON that were outside the allowed range of the power curve, the wind speed was derived from the nacelle anemometer wind speed (as specified in Section 8.2.1.2 of IEC-61400-11).

Background wind speed was derived utilizing data acquired with the 10m anemometer and normalizing the wind speed (as per Section 8.2.2 of IEC-61400-11).

4.4 Type B uncertainties

Type B uncertainties were obtained through interpretation of information provided in Annex C of IEC-61400-11, and instrument uncertainties obtained from the calibration certificate. A summary of Type B uncertainties is provided in Table 9, while detailed information (including data in 1/3 octave) is provided in Appendix C.

Table 9 - Summary of Type B uncertainties

Component	Typical	Used
Calibration	0.2 dB	0.2 dB
Board	0.3 dB	0.3 dB
Distance & direction	0.1 dB	0.1 dB
Air absorption	0 dB	0 dB
Weather conditions	0.5 dB	0.5 dB
Wind speed measured	0.7 m/s	0.7 m/s
Wind speed derived	0.2 m/s	0.2 m/s
Wind speed from power curve	0.2 m/s	0.2 m/s

4.5 Sound Pressure Level Measurements

Sound pressure level measurements are summarized in Table 10. Detailed 1/3 Octave band spectrum data, respective uncertainties, and analysis plots are provided in Appendix C. A copy of the measurement data used for analysis is provided in Appendix E and includes meteorological and turbine operational data.

Table 10 - Summary of Sound Pressure Level Measurements

Wind Speed (m/s)	Turbine ON		Background		Turbine ON, Background adjusted L_{eq}, (dBA)
	L_{eq}, (dBA)	# of data pts	L_{eq}, (dBA)	# of data pts	
7.5	52.3	81	41.7	28	51.9
8	53.5	100	41.9	31	53.1
8.5	54.3	87	41.0	23	54.1
9	54.3	130	42.1	36	54.1
9.5	54.3	124	42.3	28	54.1
10	54.3	59	42.1	32	54.0
10.5	54.3	15	42.0	34	54.1
11	54.4	28	43.5	33	54.1
11.5	54.5	33	41.7	24	54.2
12	54.3	20	41.4	33	54.1
12.5	54.4	12	42.0	29	54.2

Values marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background Values marked with two asterisk ** denote less than 3 dB difference between Turbine ON and Background and are not reported

4.6 Sound Power Level of Turbine

The calculated sound power level of the turbine T58 (as per IEC 61400-11) is summarized in Table 11 (hub height) and Table 12 (10m height). Detailed 1/3 Octave band spectrum data and respective uncertainties are provided in Appendix C.

Table 11 - $L_{WA,K}$ at each integer wind speed

Wind Speed (m/s)	Apparent L_{WA}, (dBA)	Uncertainty (dB)
7.5	102.1	0.8
8	103.3	0.8
8.5	104.2	0.8
9	104.3	0.8
9.5	104.2	0.8
10	104.2	0.7
10.5	104.2	0.8
11	104.3	0.8
11.5	104.4	0.8
12	104.3	0.8
12.5	104.3	0.8

Table 12 - $L_{WA\ 10m,K}$ at each integer wind speed

Wind Speed (m/s)	Apparent L_{WA}, (dBA)	Uncertainty (dB)
5	101.1	0.8
6	104.0	0.7
7	104.3	0.7
8	104.3	0.8
9	104.3	0.8

4.7 Tonality Analysis

The tonality analysis for Turbine T58 is summarized in Table 13, while plots of narrow band spectra at each wind speed are provided in Appendix D. The ΔL_{tn} and ΔL_a values reported represent the energy average of all data points with an identified tone that falls within the same frequency origin (as specified in Section 9.5.8 in IEC-61400-11).

The narrow band spectra provided in the plots represents an energy average of all data points in the given wind speed bin for both Turbine ON and Background.

Table 13 - Tonality Assessment Summary

Wind Speed (m/s)	Frequency (Hz)	Tonality, ΔL_{tn} (dB)	Tonal audibility, ΔL_a (dB)	FFT's with tones	Total # of FFT's	Presence (%)
8	427	-4.4	-2.2	36	100	36%
8.5	474	-3.7	-1.4	78	87	90%
9	475	-2.1	0.2	129	130	99%
9.5	115	-4.9	-2.9	123	124	99%
	476	0.1	2.3	124	124	100%
10	116	-4.0	-2.0	57	59	97%
	477	1.3	3.6	59	59	100%
10.5	117	-2.9	-0.9	13	15	87%
	479	1.7	4.0	13	15	87%
11	117	-3.8	-1.8	28	28	100%
	485	1.0	3.3	28	28	100%
11.5	118	-3.2	-1.2	31	33	94%
	489	1.2	3.4	33	33	100%
12	118	-4.1	-2.1	19	20	95%
	488	1.8	4.1	18	20	90%
12.5	118	-3.7	-1.7	12	12	100%
	489	1.6	3.9	11	12	92%

5 Closure

Measurements and analysis were carried on Turbine T58 of the Grand Renewable Wind Farm, located in the municipality of Haldimand as per International IEC 61400-11 (Edition 3.0, released 2012-11), "Wind turbine generator systems – Part 11: Acoustic noise measurement techniques".

Should you have any questions or comments please do not hesitate to contact the authors of this report.

6 References

1. International Standard IEC 61400-11 (Edition 3.0, released 2012-11), "Wind turbine generator systems – Part 11: Acoustic noise measurement techniques".

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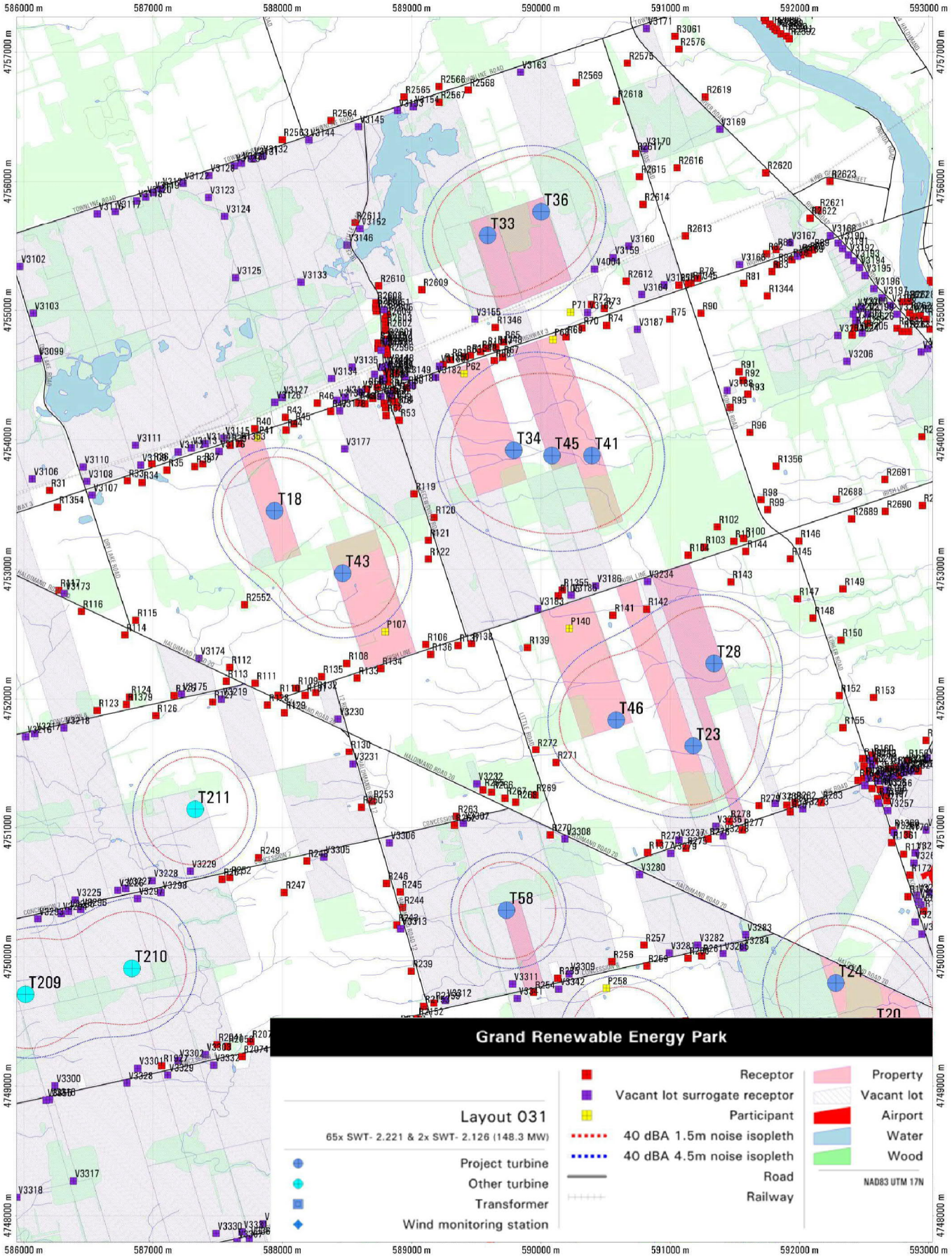
Appendix A
Site Details



aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AB Reviewed by: PA Date: Feb 1, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Site Plan **Figure A.01**

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14284.00.T58.RP1	**Project Name**
Scale: NTS Drawn by: AB Reviewed by: PA Date: Feb 1, 2016 Revision: 1	Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0
	Figure Title Site Photos

Figure A.02

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Appendix B
Turbine Information

Other conditions: Clean rotor blades, substantially horizontal, undisturbed air flow, normal turbulence (10%) and normal wind shear (0.2)

Wind [m/s]	Power [kW]
0	0
1	0
2	0
3	27
4	116
5	264
6	485
7	792
8	1196
9	1654
10	1979
11	2096
12	2121
13	2125
14	2125
15	2126
16	2126
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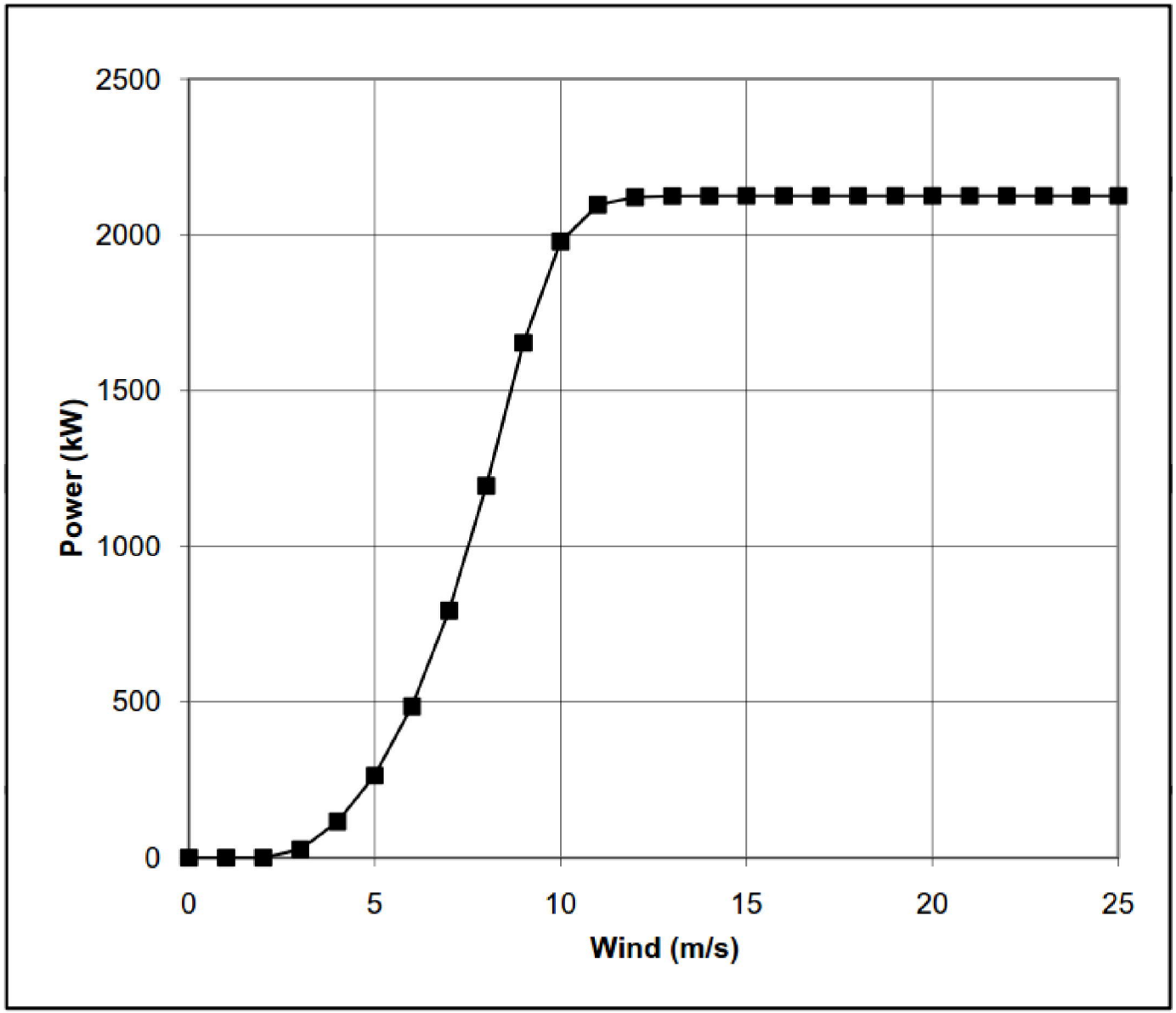
25	2126



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Scale: NTS Drawn by: AB Reviewed by: PA Date: Feb 1, 2016 Revision: 1	Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0
	Figure Title Turbine Power Curve

Figure B.01

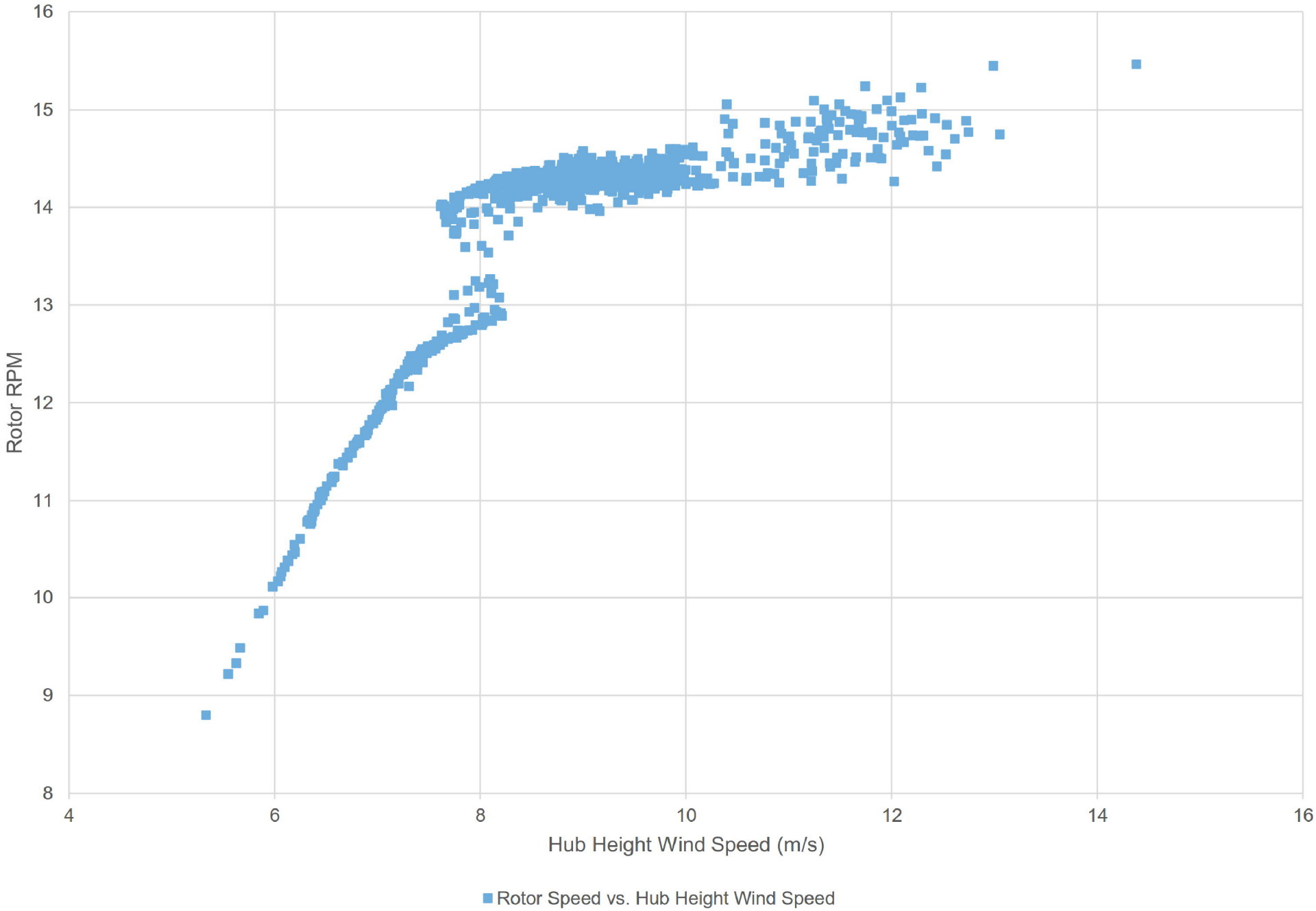

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Figure B.02

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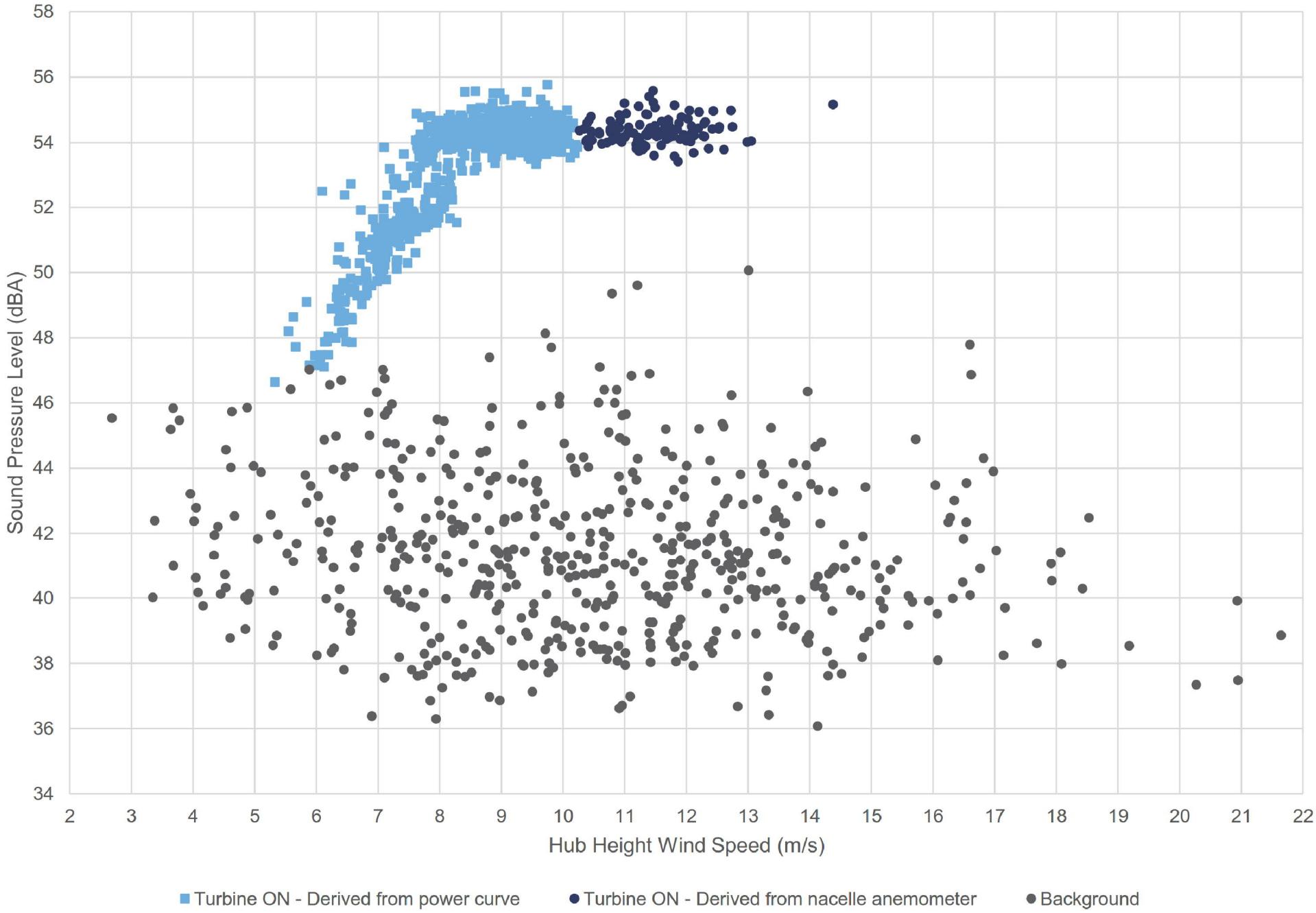
Appendix C
Apparent Sound Power Level



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14284.00.T58.RP1	**Project Name**
Scale: NTS Drawn by: AB Reviewed by: PA Date: Feb 1, 2016 Revision: 1	Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0
	Figure Title Plot of overall measurement data pairs at Position 1 (Turbine ON & Background)

Figure C.01

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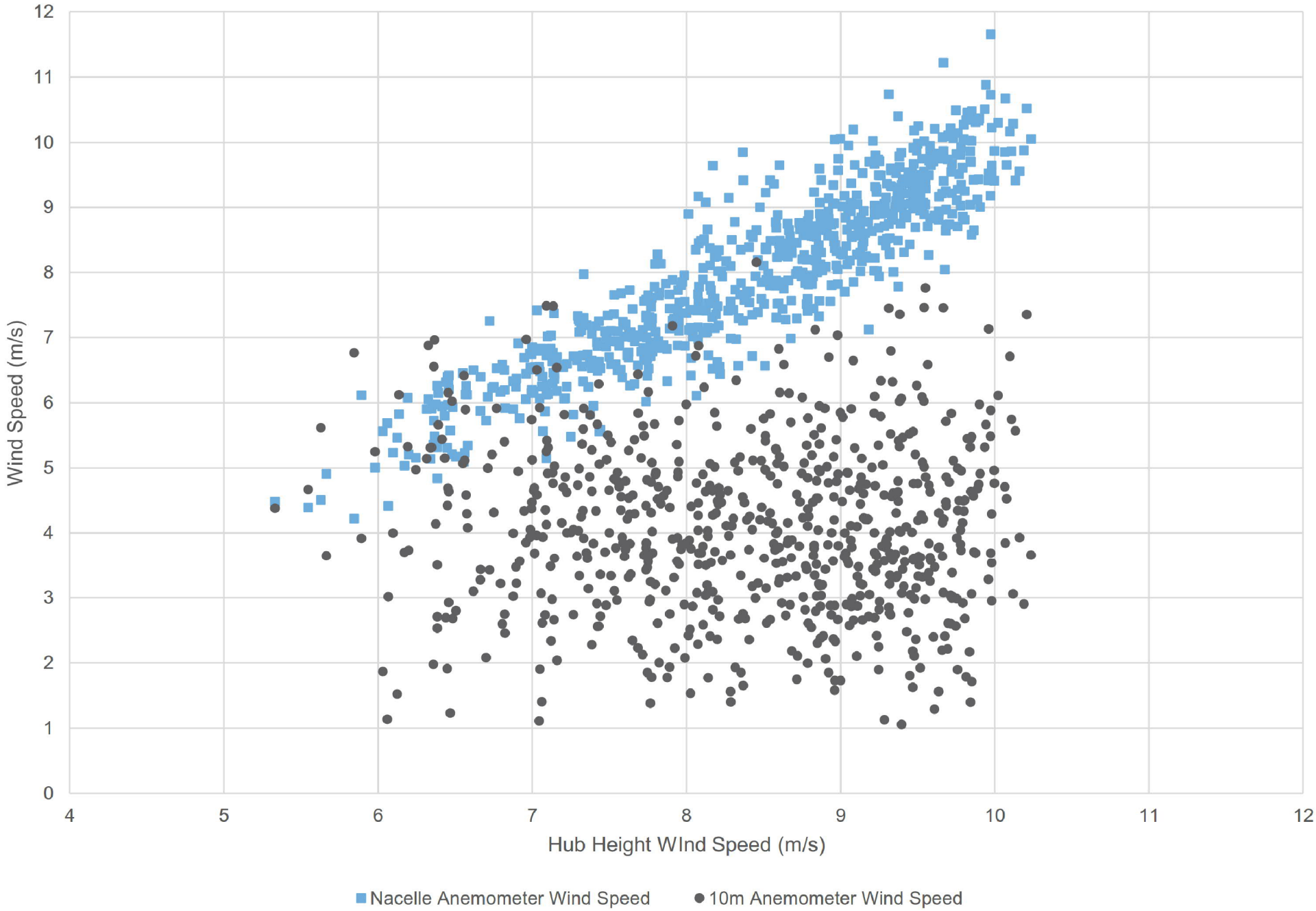
Figure C.02



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	Scale: NTS Drawn by: AB Reviewed by: PA Date: Feb 1, 2016 Revision: 1	Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0
		Figure Title Plot of power curve relative to nacelle anemometer and 10m anemometer
		Figure C.03

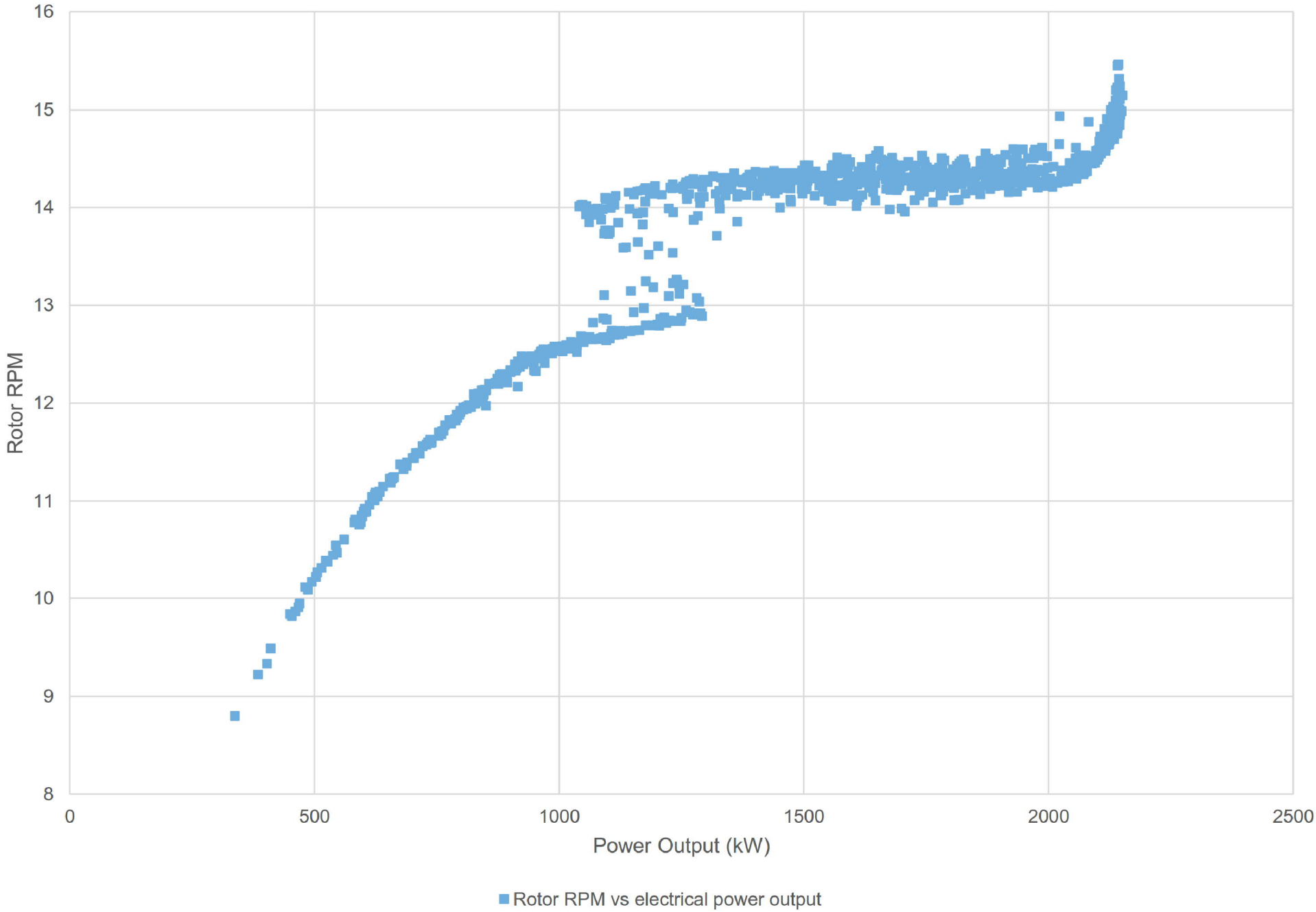

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Figure C.04

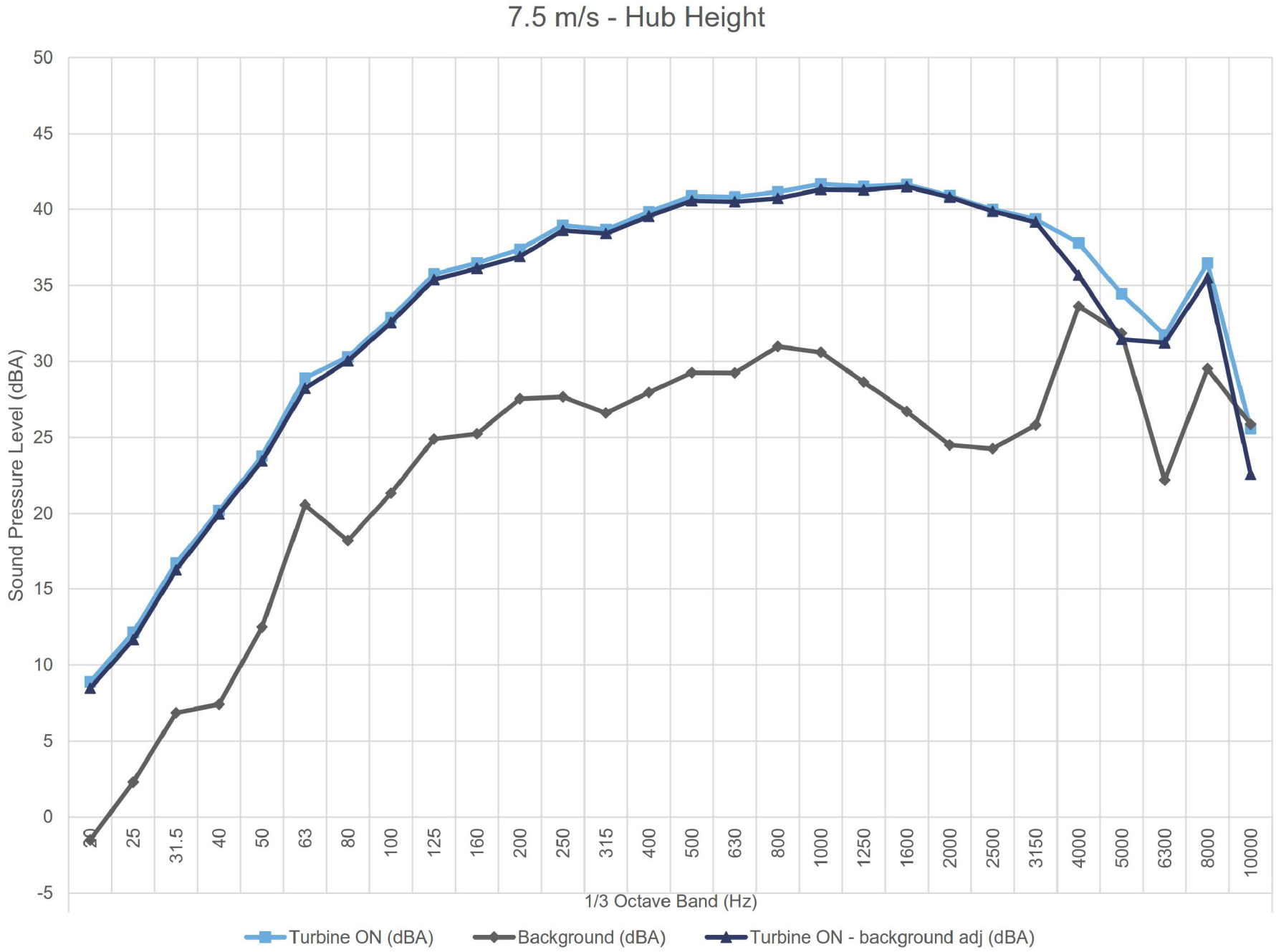

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Figure C.05

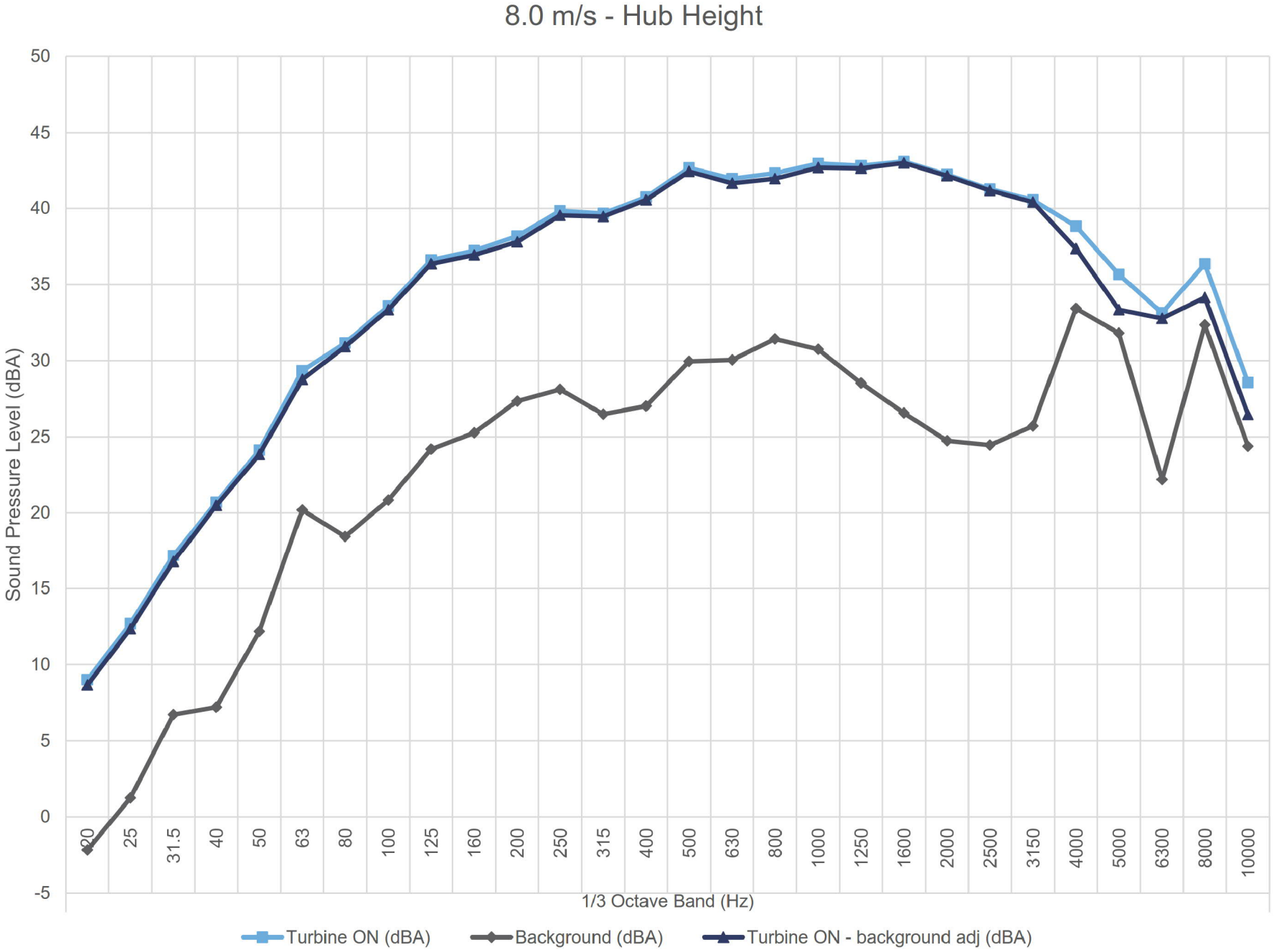

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Figure C.06

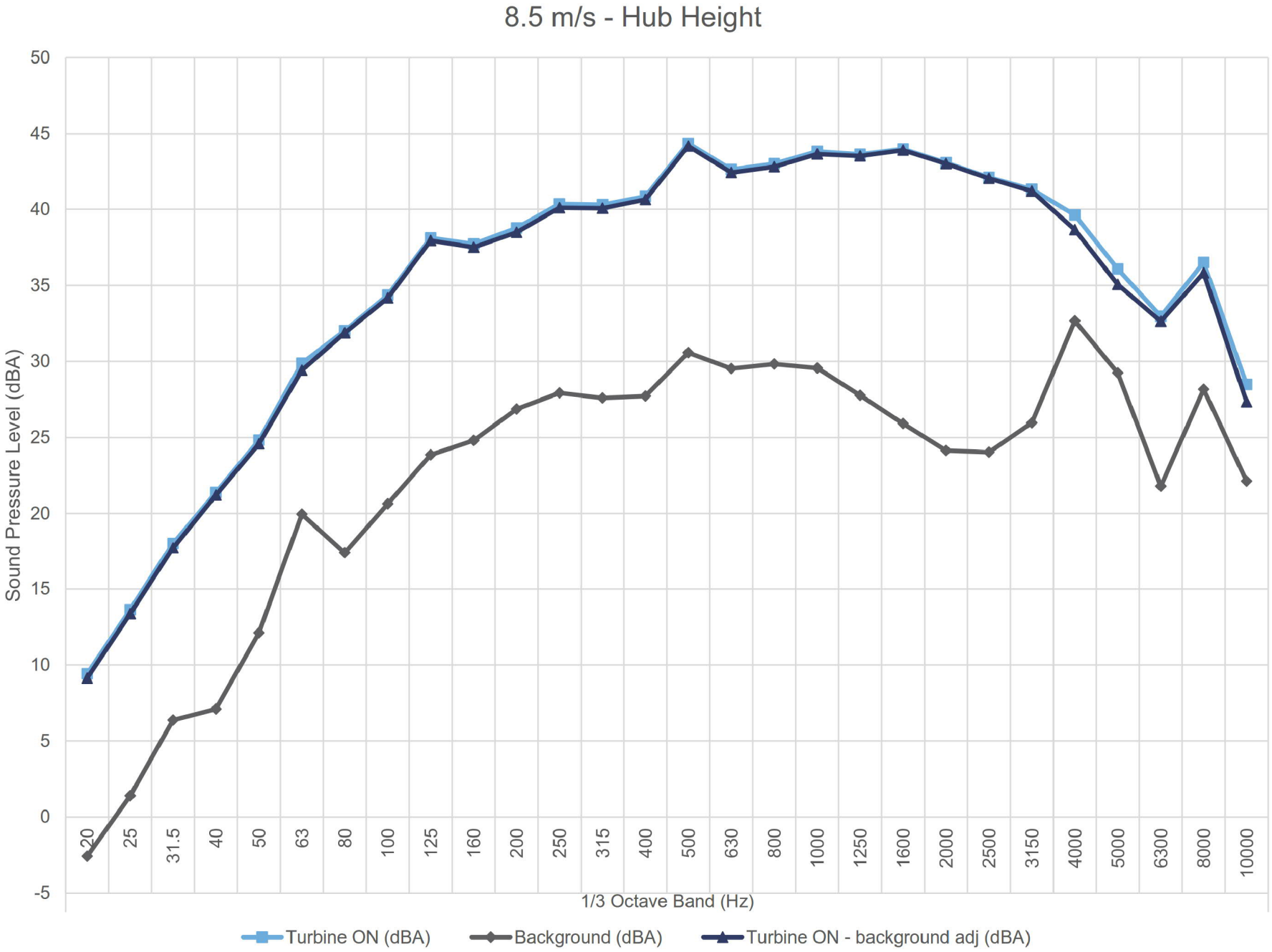

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Figure C.07

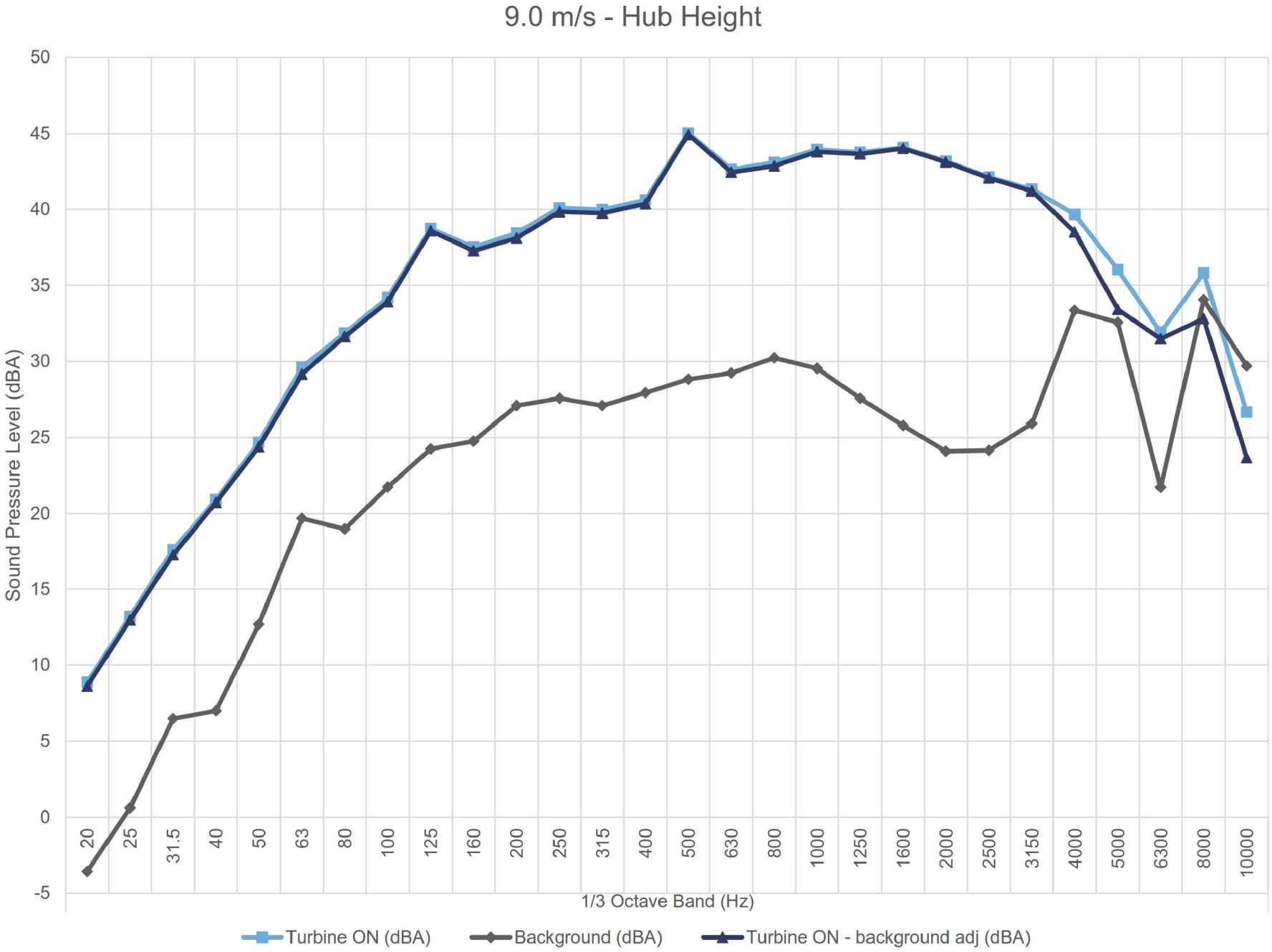

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Figure C.08

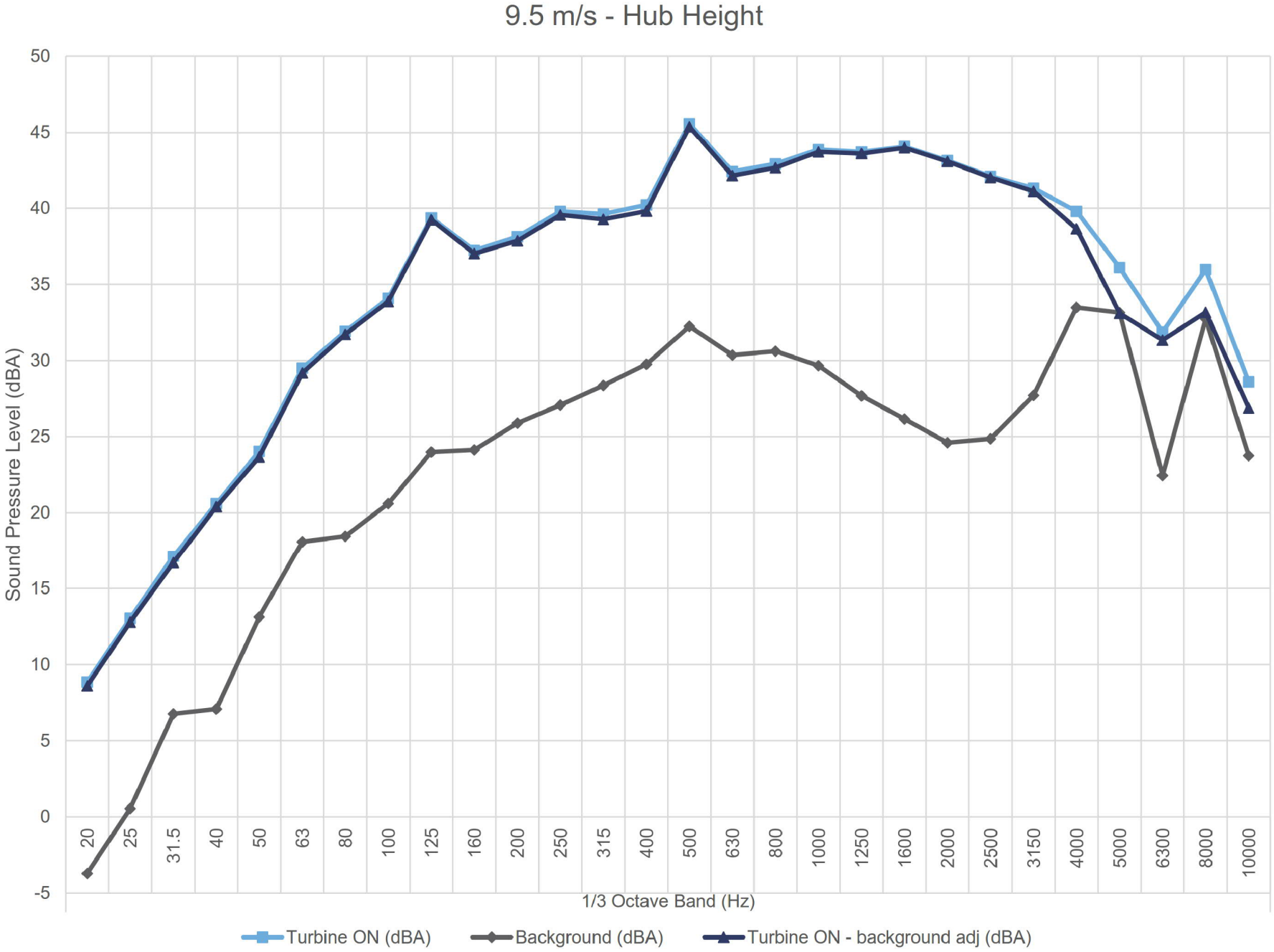

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Figure C.09

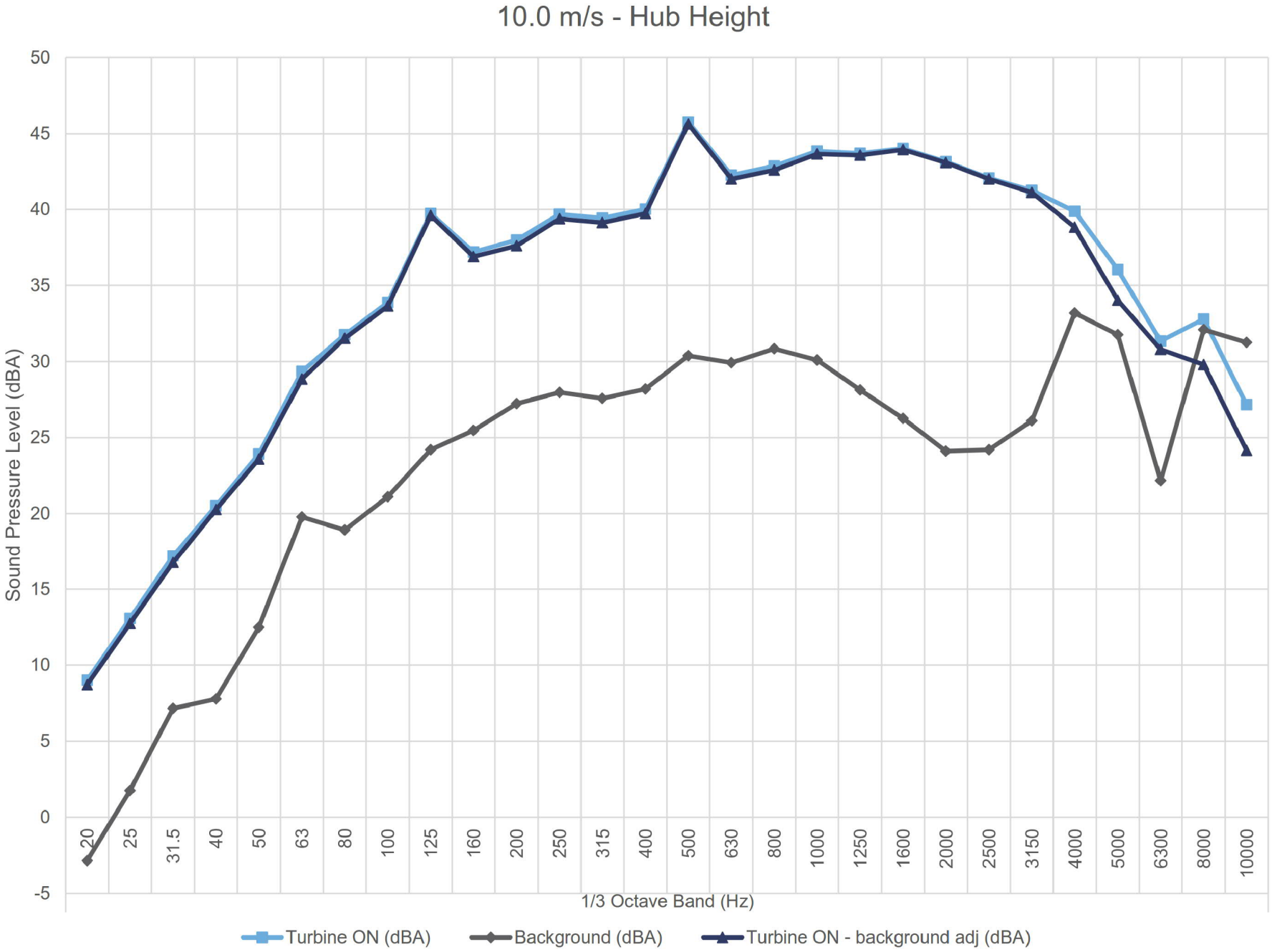

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Figure C.10

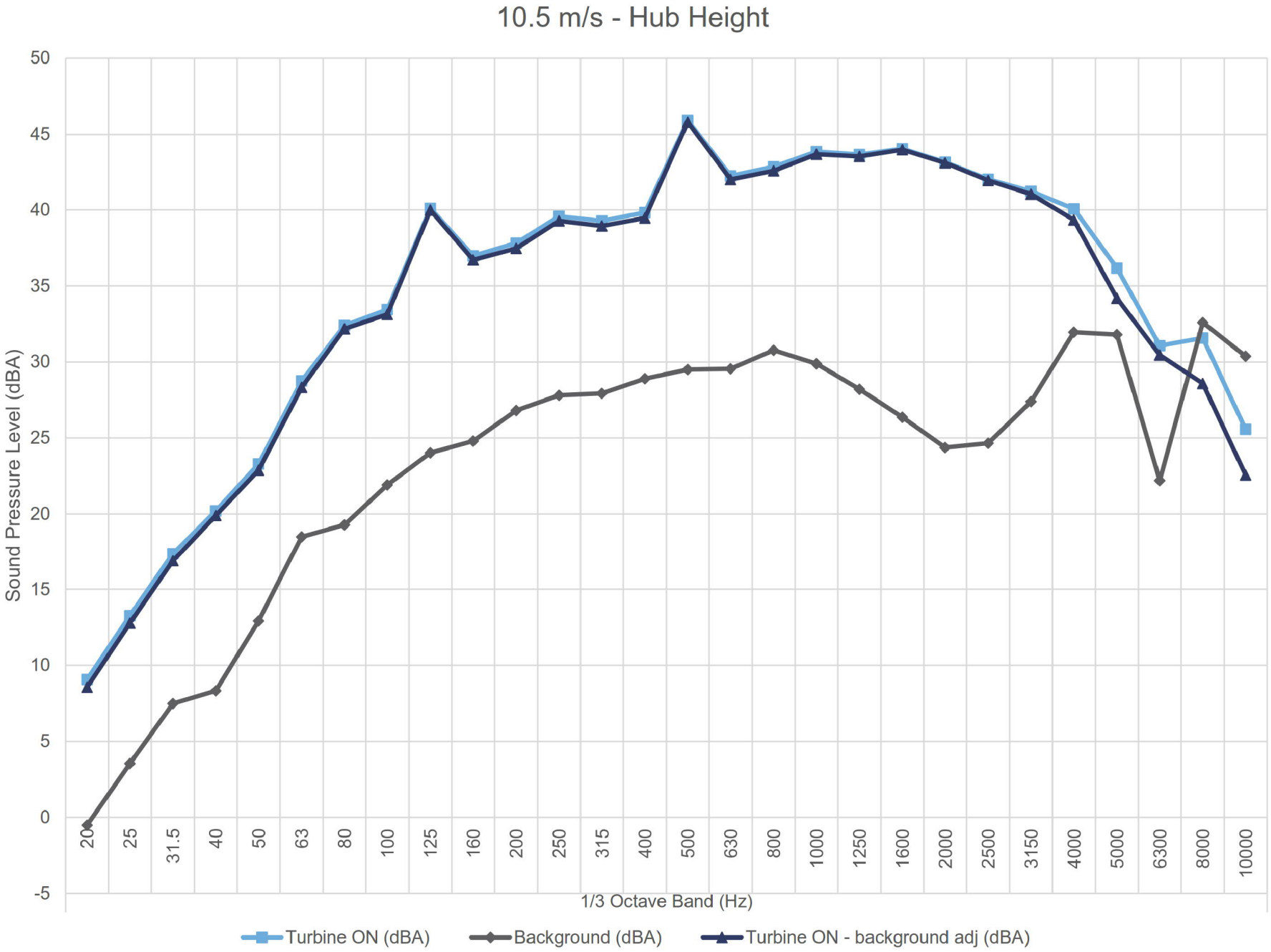

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Figure C.11

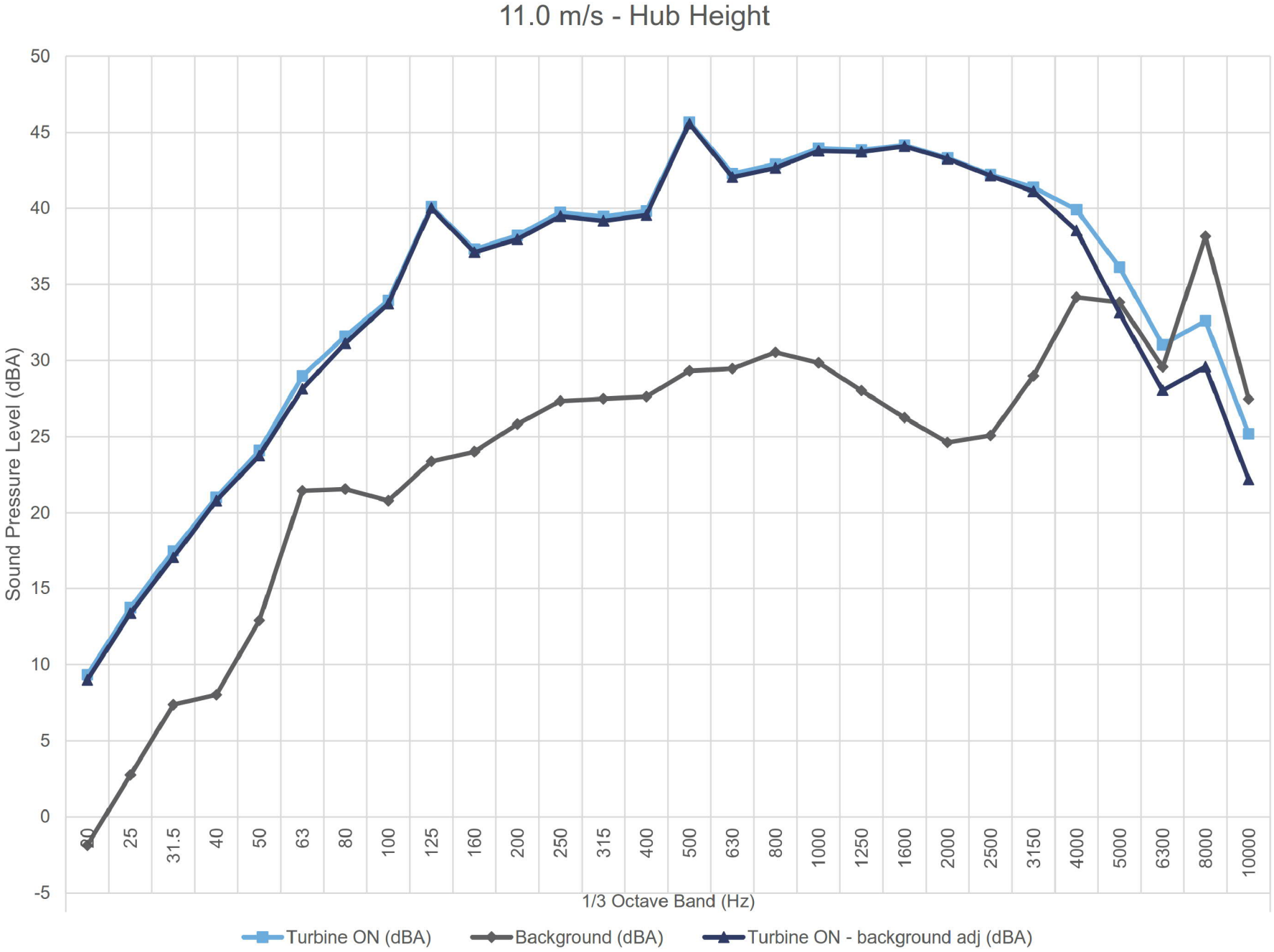

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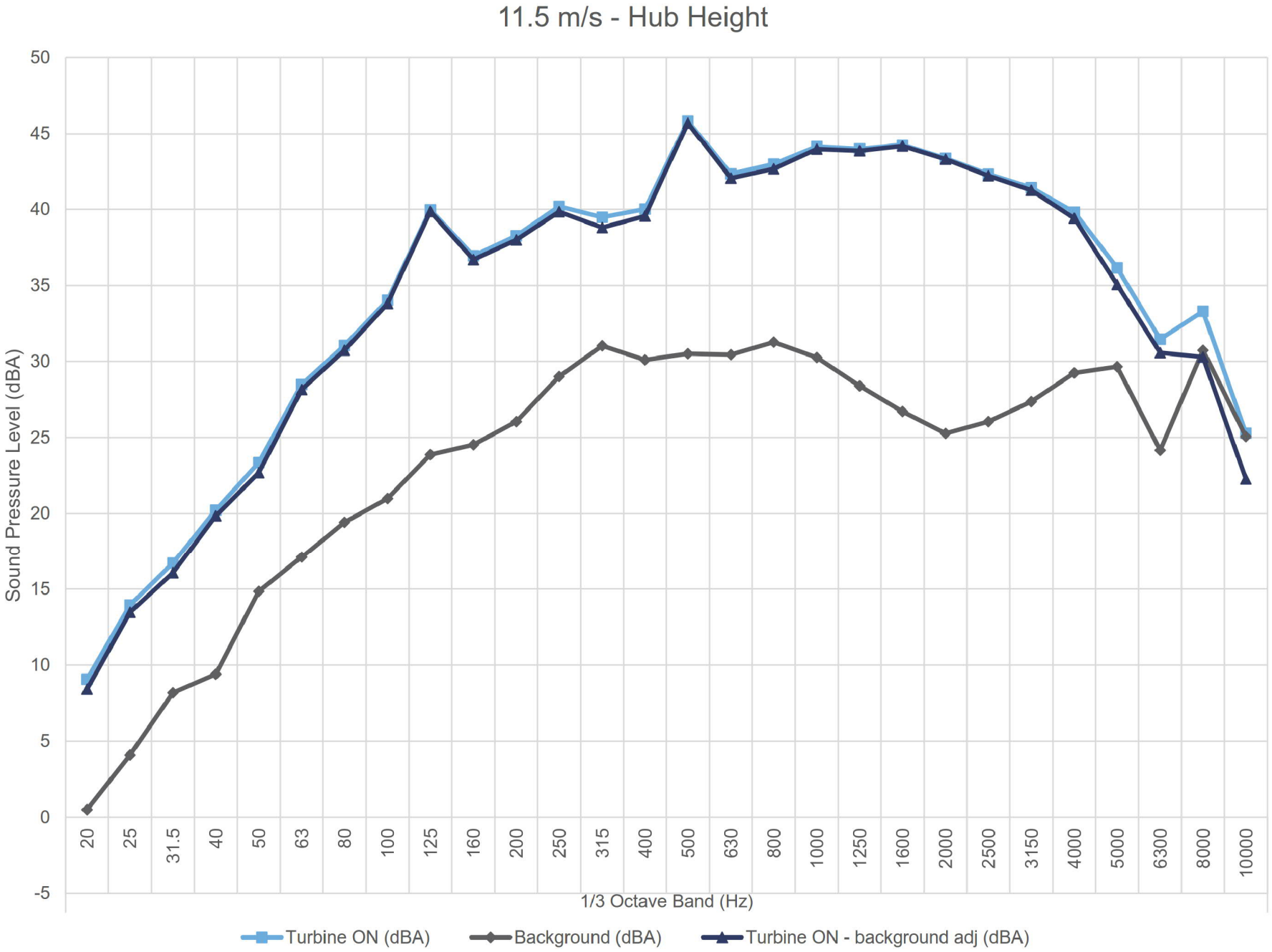
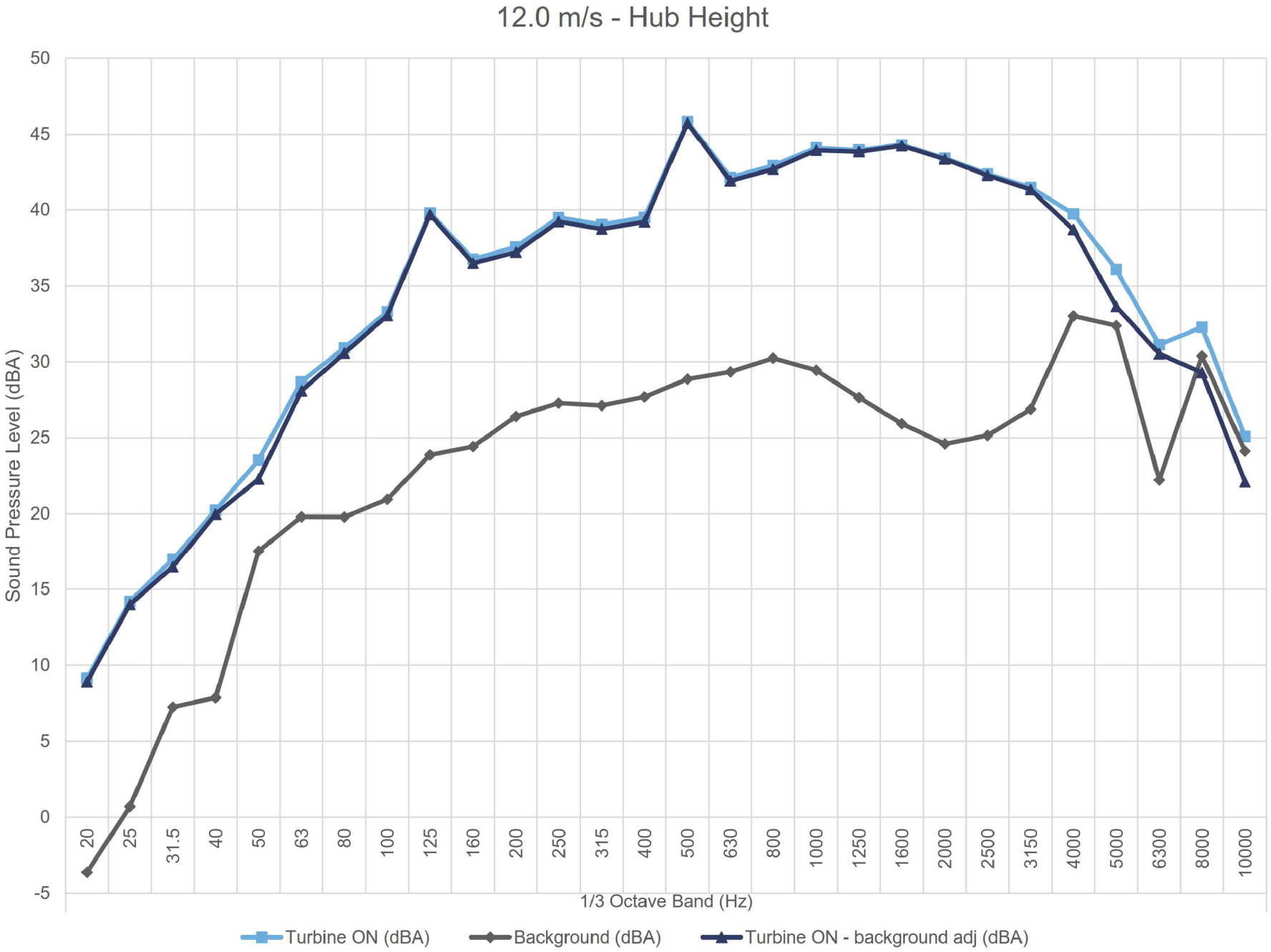
Figure C.12



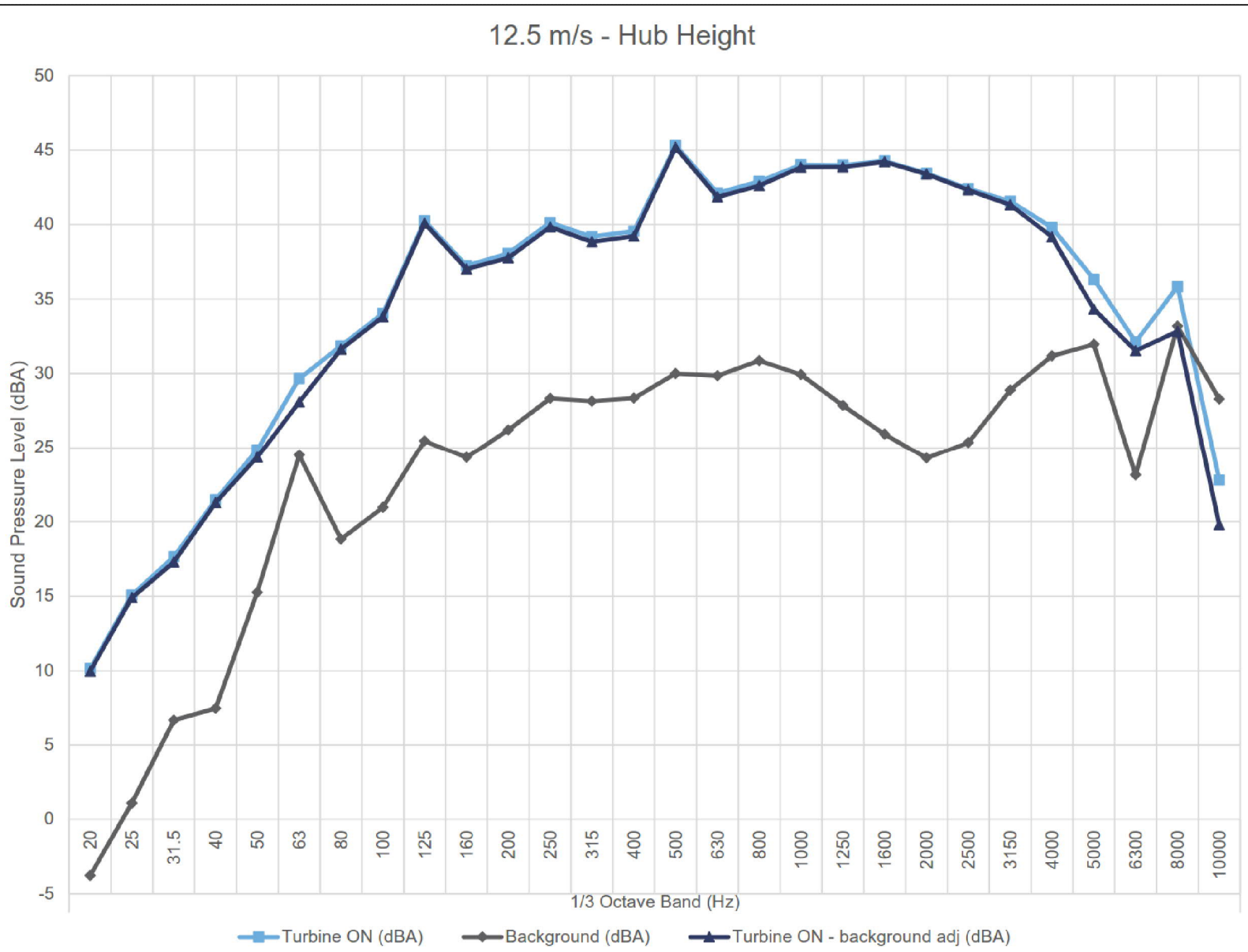
aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AB Reviewed by: PA Date: Feb 1, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 11.5 m/s

Figure C.13



aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AB Reviewed by: PA Date: Feb 1, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 12 m/s

Figure C.14



aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 12.5 m/s

Figure C.15

Table C.01 Detailed apparent sound power level data at hub height

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 01/02/2016

1/3 Octave values marked with brackets [ ] denote less than 3 dB difference between Turbine ON and Background

Overall levels marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background, while Overall values with less than 3 dB difference between Turbine ON and Background are not reported

Wind Bin (m/s)	Parameter	1/3 Octave Band (Hz)																												Overall
		20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
7.5	Turbine ON (dBA)	8.9	12.1	16.7	20.2	23.8	28.9	30.3	32.9	35.7	36.5	37.4	39.0	38.7	39.8	40.9	40.8	41.2	41.7	41.5	41.6	40.9	40.0	39.4	37.8	34.4	31.7	36.5	25.6	52.3
	Background (dBA)	-1.5	2.3	6.8	7.4	12.5	20.6	18.2	21.3	24.9	25.2	27.5	27.7	26.6	27.9	29.3	29.2	31.0	30.6	28.6	26.7	24.5	24.3	25.8	33.6	31.8	22.2	29.5	25.9	41.7
	Turbine ON - background adj (dBA)	8.5	11.7	16.2	20.0	23.4	28.2	30.0	32.5	35.4	36.1	36.9	38.6	38.4	39.5	40.6	40.5	40.7	41.3	41.3	41.5	40.8	39.9	39.2	35.7	[31.4]	31.2	35.5	[22.6]	51.9
	Signal to noise (dB)	10.4	9.8	9.9	12.8	11.3	8.3	12.1	11.5	10.8	11.2	9.8	11.3	12.1	11.9	11.6	11.6	10.2	11.1	12.9	14.9	16.4	15.7	13.5	4.2	2.6	9.5	7.0	-0.3	10.6
	Uncertainty (dB)	1.1	1.1	0.9	0.9	0.9	0.9	0.8	0.8	0.9	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.8	0.8	1.4	2.1	0.9	1.7	3.6	0.8
	PWL (dBA)	58.6	61.8	66.4	70.1	73.6	78.4	80.2	82.7	85.5	86.3	87.1	88.8	88.6	89.7	90.7	90.7	90.9	91.5	91.5	91.7	91.0	90.0	89.3	85.9	[81.6]	81.4	85.7	[72.8]	102.1
8.0	Turbine ON (dBA)	9.0	12.7	17.2	20.7	24.1	29.3	31.2	33.6	36.6	37.2	38.2	39.8	39.7	40.7	42.7	41.9	42.3	42.9	42.8	43.1	42.2	41.3	40.6	38.8	35.7	33.1	36.4	28.6	53.5
	Background (dBA)	-2.2	1.2	6.7	7.2	12.2	20.2	18.5	20.8	24.2	25.3	27.3	28.1	26.5	27.0	30.0	30.0	31.4	30.7	28.5	26.6	24.7	24.5	25.7	33.4	31.8	22.2	32.3	24.4	41.9
	Turbine ON - background adj (dBA)	8.7	12.4	16.8	20.5	23.8	28.8	30.9	33.3	36.4	36.9	37.8	39.5	39.5	40.6	42.4	41.7	41.9	42.7	42.6	43.0	42.1	41.2	40.4	37.3	33.3	32.8	34.2	26.5	53.1
	Signal to noise (dB)	11.2	11.4	10.5	13.5	11.9	9.1	12.7	12.7	12.4	12.0	10.8	11.7	13.2	13.7	12.7	11.9	10.9	12.2	14.3	16.5	17.5	16.8	14.9	5.4	3.9	10.9	4.0	4.2	11.5
	Uncertainty (dB)	1.1	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.7	0.7	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.8	0.8	1.2	1.7	0.9	2.5	3.0	0.8
	PWL (dBA)	58.8	62.5	67.0	70.7	74.0	78.9	81.1	83.5	86.5	87.1	88.0	89.7	89.6	90.7	92.6	91.8	92.1	92.9	92.8	93.2	92.3	91.4	90.6	87.5	83.5	83.0	84.3	76.6	103.3
8.5	Turbine ON (dBA)	9.4	13.6	18.0	21.4	24.8	29.9	32.0	34.4	38.1	37.7	38.8	40.4	40.3	40.9	44.3	42.6	43.0	43.8	43.6	44.0	43.1	42.1	41.3	39.6	36.1	33.0	36.5	28.5	54.3
	Background (dBA)	-2.6	1.4	6.4	7.1	12.1	19.9	17.4	20.6	23.9	24.8	26.9	27.9	27.6	27.7	30.6	29.5	29.8	29.6	27.8	25.9	24.1	24.0	26.0	32.7	29.2	21.8	28.2	22.1	41.0
	Turbine ON - background adj (dBA)	9.1	13.4	17.7	21.2	24.6	29.4	31.9	34.2	37.9	37.5	38.5	40.1	40.1	40.6	44.2	42.4	42.8	43.6	43.5	43.9	43.0	42.0	41.2	38.7	35.1	32.6	35.8	27.3	54.1
	Signal to noise (dB)	12.0	12.2	11.7	14.3	12.7	9.9	14.6	13.7	14.3	12.9	11.9	12.4	12.7	13.1	13.8	13.1	13.2	14.2	15.9	18.1	18.9	18.1	15.4	7.0	6.8	11.2	8.3	6.4	13.3
	Uncertainty (dB)	1.1	1.1	0.9	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.0	1.0	0.9	1.4	2.2	0.8
	PWL (dBA)	59.3	63.5	67.9	71.4	74.8	79.6	82.1	84.4	88.1	87.7	88.7	90.3	90.3	90.8	94.3	92.6	93.0	93.8	93.7	94.1	93.2	92.2	91.4	88.8	85.2	82.8	86.0	77.5	104.2
9.0	Turbine ON (dBA)	8.9	13.2	17.6	20.9	24.7	29.6	31.9	34.2	38.7	37.5	38.4	40.1	40.0	40.6	45.0	42.6	43.1	43.9	43.7	44.1	43.2	42.1	41.3	39.7	36.0	31.9	35.8	26.7	54.3
	Background (dBA)	-3.6	0.6	6.5	7.0	12.7	19.7	19.0	21.8	24.3	24.8	27.1	27.6	27.1	27.9	28.8	29.2	30.2	29.5	27.6	25.8	24.1	24.2	25.9	33.4	32.6	21.7	34.1	29.7	42.1
	Turbine ON - background adj (dBA)	8.6	13.0	17.3	20.7	24.4	29.2	31.6	33.9	38.6	37.3	38.1	39.8	39.7	40.4	44.9	42.4	42.8	43.8	43.6	44.0	43.1	42.0	41.2	38.5	33.4	31.5	[32.8]	[23.7]	54.1
	Signal to noise (dB)	12.4	12.6	11.1	13.9	12.0	9.9	12.9	12.4	14.5	12.8	11.4	12.5	12.9	12.7	16.2	13.4	12.8	14.4	16.2	18.3	19.1	18.0	15.4	6.3	3.5	10.2	1.8	-3.0	12.3
	Uncertainty (dB)	1.1	1.1	0.9	0.8	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.1	1.8	0.9	2.9	3.7	0.8
	PWL (dBA)	58.8	63.1	67.4	70.9	74.6	79.3	81.8	84.1	88.8	87.5	88.3	90.0	89.9	90.5	95.1	92.6	93.0	94.0	93.8	94.2	93.3	92.2	91.4	88.7	83.6	81.7	[83]	[73.9]	104.3
9.5	Turbine ON (dBA)	8.9	13.0	17.1	20.6	24.0	29.5	31.9	34.1	39.4	37.2	38.1	39.8	39.6	40.2	45.6	42.4	42.9	43.9	43.7	44.1	43.1	42.1	41.3	39.8	36.1	31.9	36.0	28.6	54.3
	Background (dBA)	-3.7	0.5	6.8	7.1	13.1	18.1	18.5	20.6	24.0	24.1	25.9	27.1	28.4	29.8	32.3	30.4	30.6	29.7	27.7	26.2	24.6	24.9	27.7	33.5	33.2	22.5	32.7	23.8	42.3
	Turbine ON - background adj (dBA)	8.6	12.8	16.7	20.4	23.7	29.2	31.7	33.9	39.2	37.0	37.9	39.6	39.3	39.8	45.4	42.1	42.7	43.7	43.6	44.0	43.1	42.0	41.1	38.6	[33.1]	31.3	33.2	26.9	54.1
	Signal to noise (dB)	12.6	12.5	10.4	13.5	10.9	11.4	13.5	13.5	15.4	13.1	12.2	12.7	11.3	10.5	13.3	12.0	12.3	14.2	16.0	17.9	18.5	17.2	13.6	6.3	2.9	9.4	3.2	4.9	12.1
	Uncertainty (dB)	1.0	1.0	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.1	2.2	0.9	2.8	2.4	0.8
	PWL (dBA)	58.8	63.0	66.9	70.6	73.9	79.4	81.9	84.1	89.4	87.2	88.0	89.7	89.5	90.0	95.6	92.3	92.8	93.9	93.8	94.2	93.3	92.2	91.3	88.8	[83.3]	81.5	83.3	77.1	104.2
10.0	Turbine ON (dBA)	9.0	13.1	17.2	20.5	23.9	29.3	31.8	33.9	39.7	37.2	38.0	39.7	39.4	40.0	45.8	42.2	42.9	43.8	43.7	44.0	43.1	42.1	41.2	39.9	36.0	31.3	32.8	27.2	54.3
	Background (dBA)	-2.9	1.7	7.2	7.8	12.5	19.8	18.9	21.1	24.2	25.5	27.2	28.0	27.6	28.2	30.4	29.9	30.8	30.1	28.1	26.3	24.1	24.2	26.1	33.2	31.8	22.2	32.1	31.2	42.1
	Turbine ON - background adj (dBA)	8.7	12.7	16.7	20.3	23.6	28.8	31.5	33.6	39.6	36.9	37.6	39.4	39.1	39.7	45.7	42.0	42.6	43.6	43.6	43.9	43.1	42.0	41.1	38.8	34.0	30.8	[29.8]	[24.2]	54.0
	Signal to noise (dB)	11.9	11.3	10.0	12.7	11.4	9.6	12.8	12.8	15.5	11.7	10.8	11.7	11.8	11.8	15.4	12.3	12.0	13.7	15.5	17.7	19.0	17.9	15.1	6.7	4.3	9.2	0.7	-4.1	12.2
	Uncertainty (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.9	1.4	0.8	2.8	3.9	0.7
	PWL (dBA)	58.9	62.9	66.9	70.5	73.8	79.0	81.7	83.8	89.8	87.1	87.8	89.5	89.3	89.9	95.8	92.2	92.7	93.8	93.7	94.1	93.3	92.2	91.3	89.0	84.2	81.0	[80]	[74.3]	104.2
10.5	Turbine ON (dBA)	9.1	13.3	17.4	20.2	23.3	28.8	32.4	33.4	40.1	37.0	37.8	39.6	39.3	39.8	45.9	42.2	42.8	43.8	43.6	44.0	43.1	42.0	41.2	40.1	36.2	31.1	31.6	25.6	54.3
	Background (dBA)	-0.5	3.5	7.5	8.3	12.9	18.5	19.3	21.9	24.0	24.8	26.8	27.8	27.9	28.9	29.5	29.5	30.8	29.9	28.2	26.4	24.4	24.6	27.4	32.0	31.8	22.2	32.6	30.4	42.0
	Turbine ON - background adj (dBA)	8.6	12.8	16.9	19.9	22.9	28.3	32.2	33.1	40.0	36.7	37.5	39.3	38.9	39.5	45.8	42.0	42.6	43.7	43.5	44.0	43.1	41.9	41.0	39.3	34.2	30.5	[28.6]	[22.6]	54.1
	Signal to noise (dB)	9.6	9.7	9.9	11.9	10.4	10.3	13.1	11.5	16.1	12.2	11.0	11.8	11.3	10.9	16.4	12.7	12.1	14.0	15.4	17.7	18.8	17.4	13.8	8.1	4.4	8.9	-1.0	-4.8	12.3
	Uncertainty (dB)	1.3	1.3	1.1	0.9	1.0	0.9	1.0	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.4	0.9	3.6	4.2	0.8
	PWL (dBA)	58.7	62.9	67.1	70.1	73.1	78.5	82.4	83.3	90.2	86.9	87.6	89.5	89.1	89.6	96.0	92.2	92.7	93.8	93.7	94.1	93.3	92.1	91.2	89.5	84.4	80.6	[78.8]	[72.7]	104.2
11.0	Turbine ON (dBA)	9.3	13.7	17.5	21.0	24.1	29.0	31.6	33.9	40.1	37.3	38.2	39.7	39.5	39.8	45.7	42.3	42.9	43.9	43.8	44.1	43.3	42.2	41.4	39.9	36.1	31.0	32.6	25.2	54.4
	Background (dBA)	-1.9	2.7	7.4	8.0	12.9	21.4	21.6	20.8	23.4	24.0	25.8	27.3	27.5	27.6	29.3	29.5	30.5	29.8	28.0	26.3	24.6	25.1	29.0	34.2	33.8	29.6	38.2	27.5	43.5
	Turbine ON - background adj (dBA)	9.0	13.4	17.0	20.8	23.8	28.1	31.1	33.7	40.0	37.1	38.0	39.5	39.2	39.5	45.6	42.0	42.6	43.8	43.7	44.1	43.2	42.1	41.1	38.5	[33.1]	[28]	[29.6]	[22.2]	54.1
	Signal to noise (dB)	11.2	11.0	10.1	13.0	11.2	7.5	10.0	13.1	16.7	13.3	12.4	12.4	12.0	12.2	16.4	12.8	12.4	14.1	15.8	17.9	18.7	17.1	12.4	5.7	2.3	1.5	-5.6	-2.3	10.9
	Uncertainty (dB)	1.2	1.1	0.9	0.9	0.9	1.0	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.2	2.1	2.3	3.7	3.9	0.8
	PWL (dBA)	59.2	63.5	67.2	71.0	73.9	78.3	81.3	83.9	90.2	87.3	88.1	89.6	89.3	89.7	95.8	92.2	92.8	93.9	93.9	94.3	93.4	92.3	91.3	88.7	[83.3]	[78.2]	[79.8]	[72.4]	104.3

Table C.01 Detailed apparent sound power level data at hub height

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 01/02/2016

1/3 Octave values marked with brackets [ ] denote less than 3 dB difference between Turbine ON and Background

Overall levels marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background, while Overall values with less than 3 dB difference between Turbine ON and Background are not reported

Wind Bin (m/s)	Parameter	1/3 Octave Band (Hz)																													Overall
		20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
11.5	Turbine ON (dBA)	9.1	13.9	16.7	20.2	23.4	28.5	31.0	34.0	40.0	36.9	38.3	40.2	39.5	40.0	45.8	42.3	43.0	44.1	44.0	44.3	43.4	42.3	41.4	39.8	36.2	31.5	33.3	25.3	54.5
	Background (dBA)	0.5	4.1	8.2	9.4	14.8	17.1	19.4	21.0	23.9	24.5	26.0	29.0	31.0	30.1	30.5	30.4	31.3	30.3	28.4	26.7	25.3	26.0	27.4	29.2	29.7	24.2	30.7	25.1	41.7
	Turbine ON - background adj (dBA)	8.4	13.5	16.1	19.9	22.7	28.2	30.7	33.8	39.9	36.7	38.0	39.9	38.8	39.6	45.7	42.0	42.7	44.0	43.9	44.2	43.3	42.2	41.3	39.4	35.1	30.6	[30.3]	[22.3]	54.2
	Signal to noise (dB)	8.6	9.8	8.5	10.8	8.5	11.4	11.6	13.0	16.1	12.4	12.2	11.2	8.4	9.9	15.3	11.9	11.7	13.9	15.6	17.5	18.1	16.3	14.1	10.6	6.5	7.3	2.6	0.2	12.7
	Uncertainty (dB)	1.2	1.2	1.0	0.9	1.0	0.9	0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.1	1.0	3.5	3.8	0.8
	PWL (dBA)	58.6	63.6	66.2	70.0	72.9	78.3	80.9	84.0	90.0	86.9	88.2	90.0	89.0	89.7	95.9	92.2	92.9	94.1	94.0	94.4	93.5	92.4	91.4	89.6	85.2	80.8	[80.5]	[72.5]	104.4
12.0	Turbine ON (dBA)	9.1	14.2	17.0	20.2	23.5	28.7	30.9	33.3	39.8	36.7	37.6	39.5	39.0	39.5	45.8	42.1	42.9	44.1	43.9	44.3	43.4	42.4	41.5	39.7	36.1	31.1	32.3	25.1	54.3
	Background (dBA)	-3.6	0.7	7.2	7.9	17.5	19.8	19.8	21.0	23.9	24.4	26.4	27.3	27.1	27.7	28.9	29.3	30.2	29.5	27.6	25.9	24.6	25.2	26.9	33.0	32.4	22.2	30.4	24.1	41.4
	Turbine ON - background adj (dBA)	8.9	14.0	16.5	20.0	22.3	28.1	30.6	33.1	39.7	36.5	37.2	39.2	38.7	39.2	45.8	41.9	42.7	43.9	43.8	44.2	43.3	42.3	41.3	38.7	33.7	30.5	[29.3]	[22.1]	54.1
	Signal to noise (dB)	12.8	13.5	9.7	12.4	6.0	8.9	11.1	12.4	15.9	12.3	11.1	12.2	11.9	11.8	17.0	12.8	12.7	14.6	16.3	18.4	18.8	17.2	14.6	6.7	3.7	8.9	1.9	1.0	12.9
	Uncertainty (dB)	1.2	1.2	1.0	0.9	1.2	1.0	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.1	1.7	0.9	3.4	4.2	0.8
	PWL (dBA)	59.1	64.2	66.7	70.2	72.5	78.3	80.8	83.2	89.9	86.7	87.4	89.4	88.9	89.4	95.9	92.1	92.9	94.1	94.0	94.4	93.5	92.5	91.5	88.9	83.8	80.7	[79.5]	[72.3]	104.3
12.5	Turbine ON (dBA)	10.1	15.1	17.7	21.5	24.9	29.7	31.8	34.0	40.2	37.2	38.1	40.1	39.2	39.6	45.3	42.1	42.9	44.0	44.0	44.3	43.4	42.4	41.6	39.8	36.3	32.1	35.8	22.8	54.4
	Background (dBA)	-3.8	1.1	6.7	7.5	15.3	24.5	18.8	21.0	25.5	24.3	26.2	28.3	28.1	28.4	30.0	29.9	30.9	29.9	27.9	25.9	24.3	25.4	28.9	31.2	32.0	23.2	33.2	28.3	42.0
	Turbine ON - background adj (dBA)	9.9	14.9	17.3	21.3	24.4	28.1	31.6	33.8	40.1	37.0	37.8	39.8	38.8	39.2	45.2	41.9	42.6	43.8	43.9	44.2	43.4	42.3	41.3	39.2	34.3	31.5	[32.8]	[19.8]	54.2
	Signal to noise (dB)	13.9	14.0	11.0	14.0	9.6	5.2	13.0	13.1	14.8	12.9	11.8	11.8	11.1	11.2	15.3	12.3	12.0	14.1	16.1	18.4	19.1	17.1	12.7	8.6	4.4	9.0	2.7	-5.5	12.4
	Uncertainty (dB)	1.2	1.2	1.0	1.0	1.1	1.4	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.5	1.0	4.5	3.8	0.8
	PWL (dBA)	60.1	65.1	67.5	71.5	74.5	78.3	81.8	84.0	90.3	87.2	87.9	90.0	89.0	89.4	95.3	92.0	92.8	94.0	94.0	94.4	93.6	92.5	91.5	89.3	84.5	81.7	[83]	[70]	104.3

Table C.02 Detailed apparent sound power level data at 10m height

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 04/02/2016

1/3 Octave values marked with brackets [ ] denote less than 3 dB difference between Turbine ON and Background

Overall levels marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background, while Overall values with less than 3 dB difference between Turbine ON and Background are not reported

Wind Bin (m/s)	Parameter	1/3 Octave Band (Hz)																													Overall
		20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
5.0	Turbine ON (dBA)	7.7	11.3	15.9	19.3	23.0	28.3	29.4	32.0	35.1	35.9	36.7	38.4	37.9	38.8	40.0	39.9	40.2	40.7	40.5	40.6	39.9	39.0	38.4	37.1	33.4	32.4	36.9	28.1	51.5
	Background (dBA)	-2.8	1.3	6.7	7.3	12.4	20.5	18.3	20.9	24.4	25.2	27.2	27.9	26.7	27.9	30.1	30.0	31.4	30.6	28.5	26.5	24.5	24.1	25.0	33.9	33.9	22.6	33.5	29.1	42.5
	Turbine ON - background adj (dBA)	7.3	10.8	15.4	19.0	22.7	27.5	29.0	31.6	34.7	35.6	36.2	38.0	37.6	38.5	39.5	39.5	39.6	40.3	40.2	40.4	39.8	38.9	38.2	34.2	[30.4]	32.0	34.3	[25.1]	50.9
	Signal to noise (dB)	10.5	10.0	9.2	12.0	10.6	7.7	11.0	11.1	10.7	10.7	9.4	10.5	11.2	11.0	9.9	10.0	8.9	10.2	12.0	14.1	15.5	14.9	13.4	3.1	-0.5	9.8	3.4	-1.0	9.0
	Uncertainty (dB)	1.0	1.0	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.6	1.9	0.9	2.3	3.3	0.8
	PWL (dBA)	57.5	61.0	65.5	69.2	72.8	77.7	79.2	81.8	84.9	85.7	86.3	88.2	87.7	88.6	89.7	89.6	89.8	90.5	90.4	90.6	90.0	89.0	88.4	84.4	[80.6]	82.1	84.5	[75.3]	101.1
6.0	Turbine ON (dBA)	9.0	13.2	17.6	21.0	24.6	29.7	31.7	34.1	38.1	37.5	38.4	40.1	40.0	40.7	44.3	42.4	42.8	43.6	43.4	43.8	42.9	41.9	41.1	39.4	35.9	32.4	35.8	27.7	54.1
	Background (dBA)	-2.7	1.1	6.6	7.2	12.4	19.9	18.3	21.4	24.2	24.9	27.2	27.8	27.1	27.8	29.9	29.6	30.5	30.0	28.0	26.1	24.4	24.2	25.8	33.4	31.9	21.9	32.7	27.8	41.9
	Turbine ON - background adj (dBA)	8.7	12.9	17.2	20.8	24.3	29.2	31.5	33.8	37.9	37.2	38.1	39.8	39.7	40.4	44.2	42.2	42.6	43.4	43.3	43.7	42.8	41.8	41.0	38.2	33.8	31.9	32.8	[24.7]	53.8
	Signal to noise (dB)	11.7	12.0	11.0	13.7	12.2	9.7	13.4	12.7	13.9	12.6	11.2	12.3	12.9	12.9	14.4	12.8	12.3	13.6	15.5	17.6	18.5	17.7	15.3	6.1	4.1	10.4	3.0	-0.1	12.2
	Uncertainty (dB)	1.1	1.0	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.1	1.4	0.9	2.3	3.4	0.7
	PWL (dBA)	58.9	63.1	67.4	70.9	74.5	79.4	81.7	84.0	88.1	87.4	88.3	90.0	89.9	90.6	94.3	92.4	92.7	93.6	93.5	93.9	93.0	92.0	91.1	88.4	83.9	82.1	83.0	[74.9]	104.0
7.0	Turbine ON (dBA)	8.9	13.2	17.1	20.5	23.8	29.1	31.7	34.0	39.6	37.2	38.1	39.8	39.5	40.1	45.7	42.3	42.9	43.9	43.7	44.1	43.2	42.1	41.3	39.8	36.1	31.6	34.9	27.8	54.3
	Background (dBA)	-2.0	2.3	7.2	7.8	12.9	18.9	19.0	21.3	24.1	24.9	26.7	27.7	28.0	28.9	30.6	29.9	30.8	29.9	28.0	26.2	24.3	24.6	27.2	32.9	32.3	22.3	32.5	29.6	42.1
	Turbine ON - background adj (dBA)	8.5	12.8	16.6	20.3	23.5	28.7	31.5	33.7	39.5	36.9	37.7	39.5	39.2	39.7	45.5	42.1	42.6	43.7	43.6	44.0	43.1	42.0	41.1	38.8	33.7	31.1	[31.9]	[24.8]	54.1
	Signal to noise (dB)	10.9	10.9	9.9	12.7	11.0	10.3	12.7	12.6	15.5	12.3	11.3	12.1	11.5	11.2	15.0	12.5	12.1	14.0	15.7	17.8	18.9	17.5	14.1	6.9	3.8	9.3	2.4	-1.9	12.2
	Uncertainty (dB)	0.9	0.9	0.8	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.9	1.4	0.8	2.1	3.2	0.7
	PWL (dBA)	58.7	63.0	66.8	70.5	73.7	78.9	81.6	83.9	89.7	87.1	87.9	89.7	89.3	89.9	95.7	92.2	92.8	93.9	93.8	94.2	93.3	92.2	91.3	89.0	83.9	81.3	[82]	[74.9]	104.3
8.0	Turbine ON (dBA)	9.0	13.9	16.9	20.5	23.6	28.7	31.2	33.8	40.0	37.0	38.1	39.9	39.4	39.8	45.8	42.3	42.9	44.1	43.9	44.2	43.4	42.3	41.4	39.8	36.1	31.3	32.8	25.0	54.4
	Background (dBA)	-1.5	2.6	7.6	8.4	15.8	19.9	20.1	20.9	23.6	24.2	26.1	27.8	28.6	28.4	29.4	29.7	30.6	29.8	27.9	26.2	24.7	25.3	27.9	33.0	32.3	26.9	35.2	25.8	42.4
	Turbine ON - background adj (dBA)	8.6	13.5	16.4	20.2	22.9	28.1	30.8	33.6	39.9	36.8	37.8	39.6	39.0	39.5	45.7	42.0	42.7	43.9	43.8	44.1	43.3	42.2	41.2	38.8	33.8	29.3	[29.8]	[22]	54.1
	Signal to noise (dB)	10.6	11.3	9.4	12.1	7.9	8.8	11.0	12.9	16.3	12.8	12.0	12.1	10.7	11.4	16.3	12.6	12.3	14.3	16.0	18.0	18.7	17.0	13.6	6.8	3.8	4.4	-2.4	-0.8	12.0
	Uncertainty (dB)	1.1	1.1	0.9	0.9	1.0	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.0	1.5	1.4	2.6	3.4	0.8
	PWL (dBA)	58.8	63.7	66.6	70.4	73.0	78.2	81.0	83.8	90.1	87.0	88.0	89.8	89.1	89.7	95.8	92.2	92.8	94.1	94.0	94.3	93.5	92.4	91.4	89.0	84.0	79.5	[80]	[72.1]	104.3

Table C.03 Type B measurement uncertainty summary

Overall Equipment Uncertainties		
	Typical values	Used values
Calibration	0.2 dB	0.2 dB
Board	0.3 dB	0.3 dB
Distance	0.1 dB	0.1 dB
Air absorption	0 dB	0 dB
Weather	0.5 dB	0.5 dB

1/3 Octave Band Uncertainties		
Frequency (Hz)	Microphone Uncertainty	Overall (including overall equipment Uncertainties)
20	0.8 dB	1 dB
25	0.8 dB	1 dB
31.5	0.5 dB	0.8 dB
40	0.5 dB	0.8 dB
50	0.5 dB	0.8 dB
63	0.5 dB	0.8 dB
80	0.5 dB	0.8 dB
100	0.5 dB	0.8 dB
125	0.5 dB	0.8 dB
160	0.5 dB	0.8 dB
200	0.3 dB	0.7 dB
250	0.3 dB	0.7 dB
315	0.3 dB	0.7 dB
400	0.3 dB	0.7 dB
500	0.3 dB	0.7 dB
630	0.3 dB	0.7 dB
800	0.3 dB	0.7 dB
1000	0.3 dB	0.7 dB
1250	0.3 dB	0.7 dB
1600	0.3 dB	0.7 dB
2000	0.3 dB	0.7 dB
2500	0.5 dB	0.8 dB
3150	0.5 dB	0.8 dB
4000	0.5 dB	0.8 dB
5000	0.5 dB	0.8 dB
6300	0.5 dB	0.8 dB
8000	0.5 dB	0.8 dB
10000	1.3 dB	1.4 dB

Table C.04 Detailed measruement uncertainty at hub height

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 01/02/2016

Wind Bin (m/s)	Parameter	Average Wind Speed (m/s)	# of data points	Parameter	1/3 Octave Band (Hz)																											Overall
					20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
7.5	Turbine ON	7.53	81	Average (dBA)	8.9	12.2	16.8	20.3	23.8	28.9	30.4	32.9	35.8	36.5	37.4	39.0	38.7	39.9	40.9	40.9	41.2	41.7	41.6	41.7	41.0	40.1	39.4	37.8	34.5	31.7	36.5	25.4	52.3
				Uncertainty A (dB)	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.3	1.1	0.7	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	1.4	1.6	
	Background	7.48	28	Average (dBA)	-1.5	2.3	6.9	7.4	12.5	20.6	18.2	21.3	24.9	25.2	27.5	27.6	26.6	28.0	29.2	29.2	31.0	30.6	28.6	26.7	24.5	24.2	25.8	33.6	31.9	22.2	29.4	25.9	41.7
				Uncertainty A (dB)	0.8	0.6	0.2	0.3	0.4	0.9	0.4	0.5	0.7	0.7	0.9	0.6	0.4	0.6	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.6	0.6	1.2	0.4	1.6	1.3	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.3	1.2	0.8	0.9	0.9	1.2	0.9	0.9	1.1	1.1	1.1	0.9	0.8	0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.9	1.0	1.0	1.5	0.9	1.8	1.9	
8.0	Turbine ON	7.99	100	Average (dBA)	9.0	12.7	17.2	20.7	24.1	29.3	31.2	33.6	36.6	37.2	38.2	39.8	39.7	40.7	42.7	41.9	42.3	42.9	42.8	43.1	42.2	41.3	40.6	38.8	35.7	33.1	36.4	28.6	53.5
				Uncertainty A (dB)	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.0	0.9	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	1.2	1.7	
	Background	8.00	31	Average (dBA)	-2.2	1.2	6.7	7.2	12.2	20.2	18.5	20.8	24.2	25.3	27.3	28.1	26.5	27.0	29.9	30.1	31.4	30.7	28.5	26.6	24.7	24.5	25.7	33.4	31.8	22.2	32.4	24.4	41.9
				Uncertainty A (dB)	0.8	0.5	0.3	0.3	0.4	0.9	0.5	0.5	0.7	0.8	0.9	0.8	0.5	0.6	0.7	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	1.0	1.2	0.5	1.9	1.1	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.3	1.1	0.8	0.9	0.9	1.2	0.9	1.0	1.0	1.1	1.1	1.1	0.9	0.9	1.0	0.9	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.3	1.4	0.9	2.0	1.8	
8.5	Turbine ON	8.51	87	Average (dBA)	9.4	13.6	18.0	21.4	24.8	29.9	32.0	34.4	38.2	37.7	38.8	40.4	40.3	40.9	44.4	42.6	43.0	43.8	43.6	44.0	43.1	42.1	41.3	39.7	36.1	33.0	36.5	28.5	54.3
				Uncertainty A (dB)	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	0.8	0.9	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.2	1.7	
	Background	8.51	23	Average (dBA)	-2.6	1.4	6.4	7.1	12.1	19.9	17.4	20.6	23.9	24.8	26.9	27.9	27.6	27.7	30.6	29.5	29.8	29.5	27.8	25.9	24.1	24.0	26.0	32.6	29.2	21.8	28.1	22.1	41.0
				Uncertainty A (dB)	0.9	0.7	0.3	0.4	0.5	1.0	0.3	0.5	0.6	0.8	0.9	0.8	0.7	0.7	0.8	0.7	0.6	0.6	0.5	0.4	0.4	0.4	0.6	1.0	0.9	0.4	1.4	0.8	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.4	1.2	0.9	0.9	0.9	1.3	0.9	0.9	1.0	1.1	1.1	1.0	1.0	1.0	1.1	1.0	0.9	0.9	0.8	0.8	0.8	0.9	1.0	1.3	1.2	0.9	1.6	1.7	
9.0	Turbine ON	8.99	130	Average (dBA)	8.9	13.2	17.6	20.9	24.7	29.6	31.9	34.2	38.7	37.5	38.5	40.1	40.0	40.6	45.0	42.6	43.1	43.9	43.8	44.1	43.2	42.1	41.3	39.7	36.0	31.9	35.8	26.6	54.3
				Uncertainty A (dB)	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.7	0.5	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.1	1.5	
	Background	8.95	36	Average (dBA)	-3.6	0.6	6.4	7.0	12.6	19.8	19.0	21.9	24.3	24.8	27.2	27.6	27.0	27.8	28.5	29.1	30.2	29.5	27.6	25.7	24.0	24.1	25.7	33.4	32.5	21.7	34.2	30.2	42.1
				Uncertainty A (dB)	0.6	0.4	0.2	0.3	0.3	0.8	0.5	0.5	0.5	0.5	0.7	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.8	1.2	0.4	2.0	1.9	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.2	1.1	0.8	0.8	0.9	1.1	0.9	1.0	0.9	0.9	1.0	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.1	1.4	0.9	2.2	2.4	
9.5	Turbine ON	9.48	124	Average (dBA)	8.8	13.0	17.1	20.6	24.0	29.5	31.9	34.1	39.4	37.2	38.1	39.8	39.6	40.2	45.6	42.4	42.9	43.9	43.7	44.1	43.1	42.1	41.3	39.8	36.1	31.9	36.1	28.7	54.3
				Uncertainty A (dB)	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.8	0.7	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.1	1.6	
	Background	9.52	28	Average (dBA)	-3.7	0.5	6.8	7.1	13.1	18.0	18.4	20.6	24.0	24.1	25.8	27.1	28.4	29.8	32.4	30.4	30.6	29.7	27.7	26.2	24.6	24.9	27.8	33.5	33.2	22.5	32.7	23.5	42.3
				Uncertainty A (dB)	0.6	0.4	0.2	0.3	0.6	0.8	0.6	0.5	0.6	0.7	0.7	0.6	0.7	0.8	1.0	0.6	0.5	0.4	0.3	0.4	0.5	0.5	0.8	1.0	1.4	0.5	2.0	1.1	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.2	1.1	0.8	0.9	1.0	1.2	1.0	0.9	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.2	0.9	0.9	0.8	0.8	0.8	0.8	0.9	1.1	1.3	1.6	1.0	2.2	1.8	
10.0	Turbine ON	9.97	59	Average (dBA)	9.0	13.0	17.2	20.6	24.0	29.5	31.6	34.0	39.7	37.2	38.0	39.7	39.4	40.1	45.7	42.3	42.9	43.8	43.7	44.0	43.1	42.1	41.3	39.8	36.0	31.4	33.0	27.4	54.3
				Uncertainty A (dB)	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.8	0.9	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.1	1.1	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.1	1.7	
	Background	9.99	32	Average (dBA)	-2.9	1.7	7.2	7.8	12.5	19.8	18.9	21.1	24.2	25.5	27.2	28.0	27.6	28.2	30.4	29.9	30.8	30.1	28.1	26.3	24.1	24.2	26.1	33.2	31.8	22.2	32.1	31.3	42.1
				Uncertainty A (dB)	0.7	0.6	0.3	0.4	0.4	0.9	0.5	0.4	0.5	0.6	0.7	0.6	0.4	0.5	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.5	0.8	1.2	0.4	1.8	2.2	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.2	1.2	0.9	0.9	0.9	1.2	0.9	0.9	1.0	1.0	1.0	1.0	0.9	0.8	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.9	1.1	1.4	0.9	1.9	2.6	
10.5	Turbine ON	10.46	15	Average (dBA)	9.1	13.2	17.4	20.1	23.2	28.7	32.5	33.4	40.1	37.0	37.8	39.6	39.3	39.8	45.9	42.2	42.8	43.8	43.6	44.0	43.1	42.0	41.2	40.1	36.2	31.1	31.5	25.6	54.3
				Uncertainty A (dB)	0.6	0.6	0.7	0.4	0.5	0.2	0.7	0.3	0.3	0.2	0.1	0.2	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.3	1.5	1.3	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.2	1.2	1.0	0.9	0.9	0.8	1.1	0.8	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.7	1.9	
	Background	10.53	34	Average (dBA)	-0.4	3.6	7.5	8.4	12.9	18.4	19.3	22.0	24.0	24.8	26.8	27.8	28.0	28.9	29.4	29.5	30.8	29.9	28.2	26.4	24.4	24.7	27.5	31.9	31.8	22.2	32.6	30.3	42.0
				Uncertainty A (dB)	0.9	0.7	0.3	0.5	0.4	0.7	0.6	0.5	0.6	0.7	0.7	0.7	0.6	0.7	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.7	0.8	1.1	0.5	1.7	1.8	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.4	1.3	0.9	0.9	0.9	1.1	1.0	0.9	1.0	1.0	1.0	1.0	0.9	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1.1	1.1	1.4	0.9	1.9	2.3	

Table C.04 Detailed measruement uncertainty at hub height

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 01/02/2016

Wind Bin (m/s)	Parameter	Average Wind Speed (m/s)	# of data points	Parameter	1/3 Octave Band (Hz)																											Overall
					20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
11.0	Turbine ON	10.99	28	Average (dBA)	9.3	13.7	17.5	21.0	24.1	29.0	31.6	34.0	40.1	37.3	38.2	39.7	39.5	39.8	45.7	42.3	42.9	43.9	43.8	44.1	43.3	42.2	41.4	39.9	36.1	31.0	32.6	25.2	54.4
				Uncertainty A (dB)	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.1	1.0	
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.4	
				Combined Uncertainty (dB)	1.1	1.1	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.4	1.8		
	Background	10.97	33	Average (dBA)	-2.0	2.7	7.3	7.9	12.8	21.7	21.7	20.8	23.4	24.0	25.8	27.2	27.3	27.5	29.3	29.4	30.5	29.8	28.0	26.2	24.6	25.0	29.1	34.4	34.1	29.9	38.6	27.6	43.7
				Uncertainty A (dB)	0.8	0.7	0.4	0.4	0.4	1.2	1.0	0.4	0.5	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.5	1.0	1.0	1.3	1.5	2.5	1.5		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.3	1.2	0.9	0.9	0.9	1.4	1.2	0.9	1.0	1.0	0.9	0.9	0.8	0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.9	1.3	1.3	1.5	1.7	2.6	2.1		
11.5	Turbine ON	11.46	33	Average (dBA)	9.1	13.9	16.7	20.2	23.3	28.5	31.0	34.0	40.0	36.9	38.3	40.2	39.5	40.0	45.8	42.3	43.0	44.1	44.0	44.3	43.4	42.3	41.4	39.8	36.2	31.5	33.3	25.3	54.5
				Uncertainty A (dB)	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.4	0.2	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	1.2	0.8		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.0	1.1	0.8	0.9	0.9	0.8	0.8	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.4	1.6		
	Background	11.52	24	Average (dBA)	0.6	4.1	8.2	9.4	14.9	17.0	19.3	21.0	23.9	24.5	26.0	29.1	31.2	30.2	30.6	30.5	31.3	30.3	28.4	26.7	25.3	26.1	27.3	29.1	29.5	24.0	30.5	25.0	41.7
				Uncertainty A (dB)	1.3	1.0	0.6	0.7	0.8	0.7	0.8	0.6	0.8	0.7	0.7	0.9	1.0	0.9	0.7	0.6	0.5	0.4	0.4	0.4	0.5	0.5	0.6	0.6	1.0	0.8	1.9	1.3		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.6	1.5	1.0	1.1	1.1	1.1	1.1	1.0	1.1	1.1	1.0	1.2	1.2	1.1	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.9	1.0	1.0	1.3	1.1	2.1	2.0		
12.0	Turbine ON	11.94	20	Average (dBA)	9.1	14.2	17.0	20.2	23.5	28.7	30.9	33.3	39.8	36.7	37.5	39.5	39.0	39.5	45.8	42.1	42.9	44.1	43.9	44.3	43.4	42.4	41.5	39.7	36.1	31.1	32.2	25.2	54.3
				Uncertainty A (dB)	0.5	0.5	0.5	0.4	0.4	0.2	0.3	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	1.3	1.4		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	1.6	2.0		
	Background	11.93	33	Average (dBA)	-3.6	0.7	7.3	7.9	17.8	19.2	19.9	21.0	23.7	24.4	26.4	27.1	27.0	27.6	28.7	29.3	30.2	29.4	27.6	25.9	24.6	25.1	26.6	33.3	32.4	22.1	30.0	23.6	41.4
				Uncertainty A (dB)	0.6	0.4	0.3	0.4	1.1	0.9	0.7	0.3	0.6	0.6	0.6	0.5	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.9	1.2	0.4	1.5	1.0		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.2	1.1	0.9	0.9	1.3	1.2	1.1	0.9	1.0	1.0	0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.9	1.0	1.2	1.4	0.9	1.7	1.7		
12.5	Turbine ON	12.45	12	Average (dBA)	10.3	15.1	17.8	21.7	25.1	29.8	32.0	34.2	40.3	37.3	38.1	40.2	39.2	39.6	45.4	42.1	42.9	44.0	44.0	44.3	43.4	42.4	41.6	39.8	36.3	32.1	35.8	22.7	54.4
				Uncertainty A (dB)	0.7	0.7	0.5	0.6	0.6	0.4	0.5	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.4	2.0	0.8		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.2	1.2	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	2.1	1.6		
	Background	12.54	29	Average (dBA)	-3.8	1.1	6.6	7.4	15.1	24.9	18.8	21.0	25.6	24.3	26.2	28.4	28.2	28.4	30.1	29.9	30.9	30.0	27.9	25.9	24.3	25.4	29.0	31.0	31.9	23.2	33.4	28.6	42.1
				Uncertainty A (dB)	0.6	0.5	0.2	0.3	0.7	1.7	0.5	0.5	0.9	0.6	0.7	0.8	0.6	0.7	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.9	0.8	1.4	0.7	2.1	1.8		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.2	1.1	0.8	0.9	1.1	1.9	1.0	0.9	1.2	1.0	1.0	1.0	0.9	1.0	0.9	0.8	0.8	0.8	0.8	0.7	0.8	0.9	1.2	1.1	1.6	1.0	2.2	2.3		

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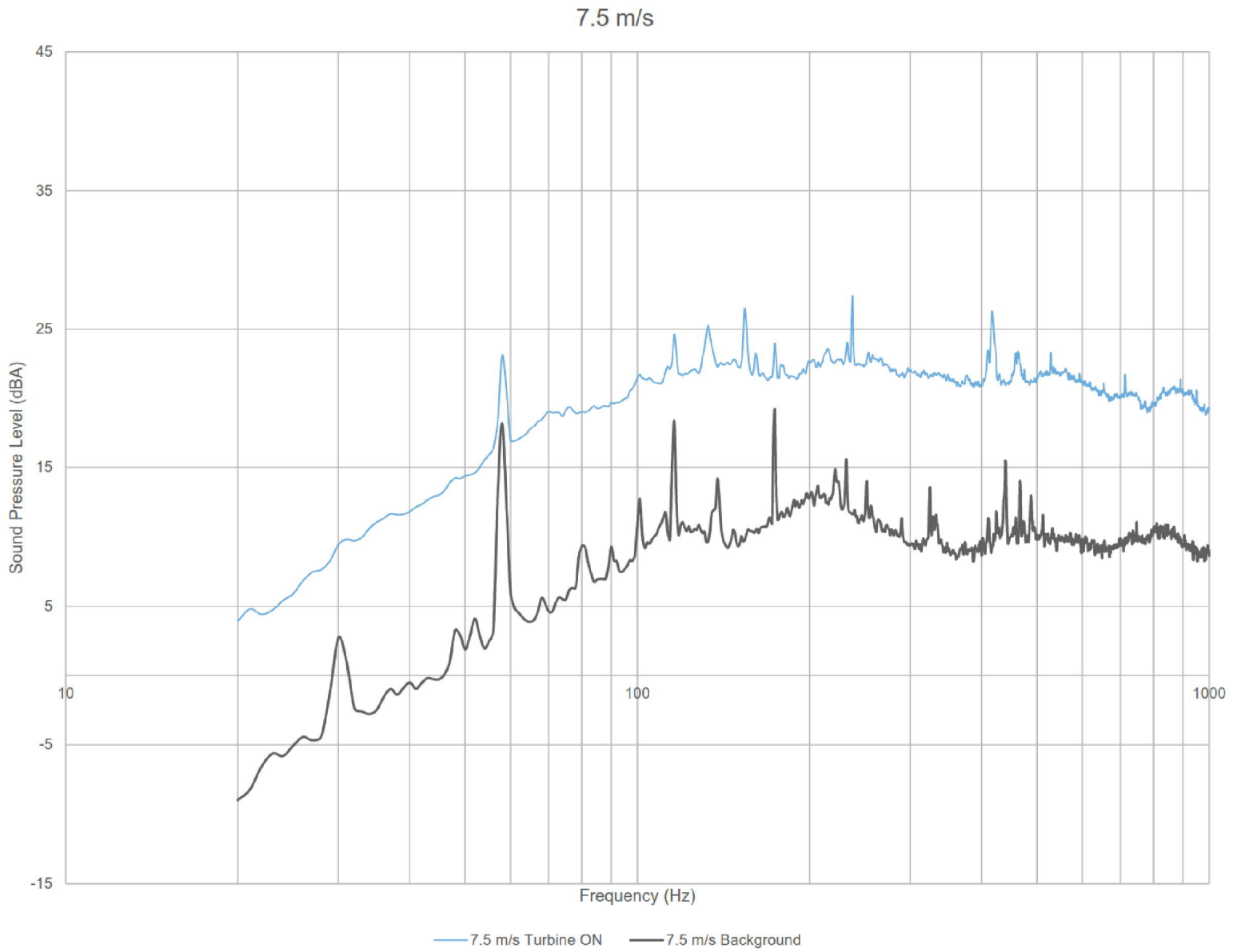
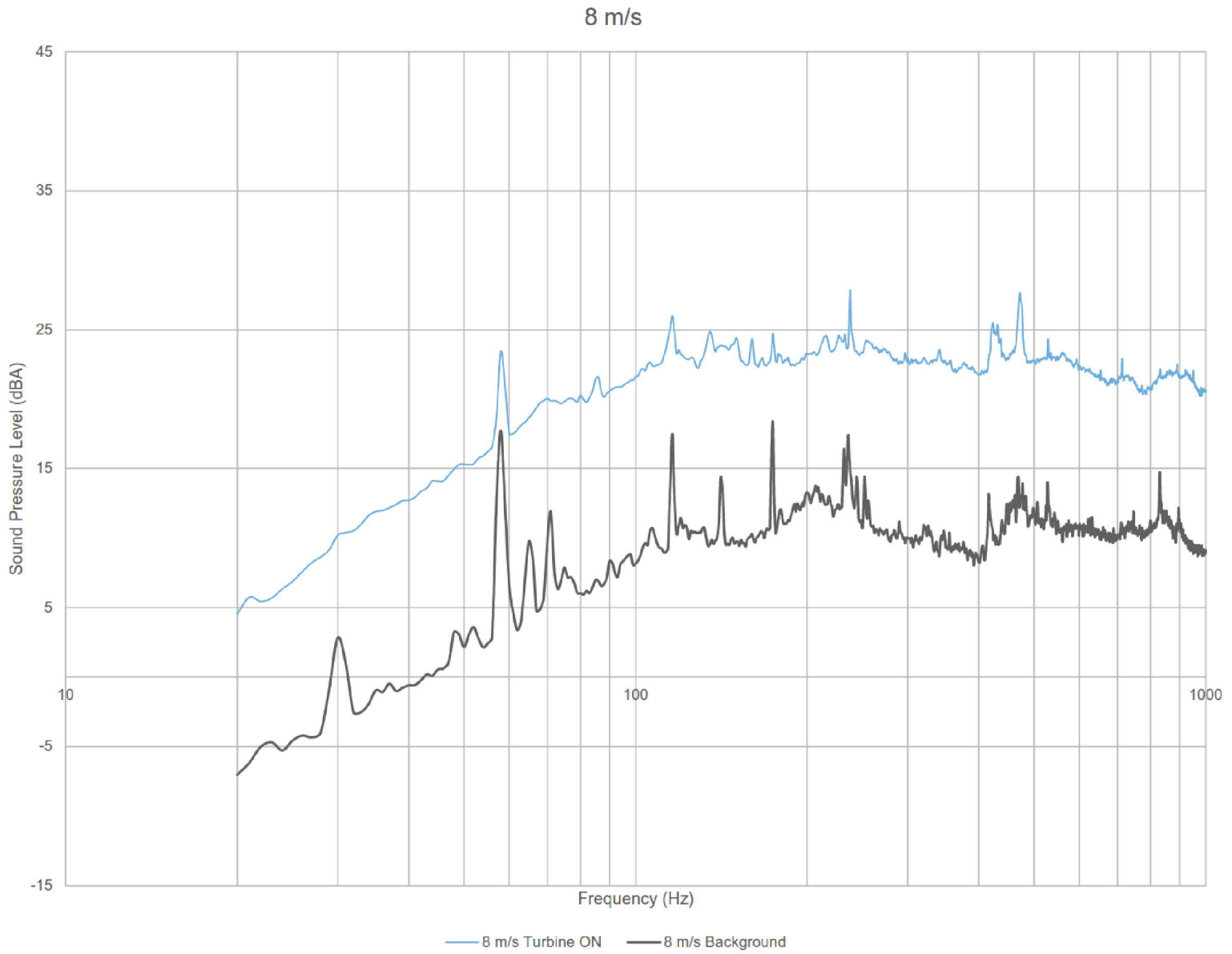
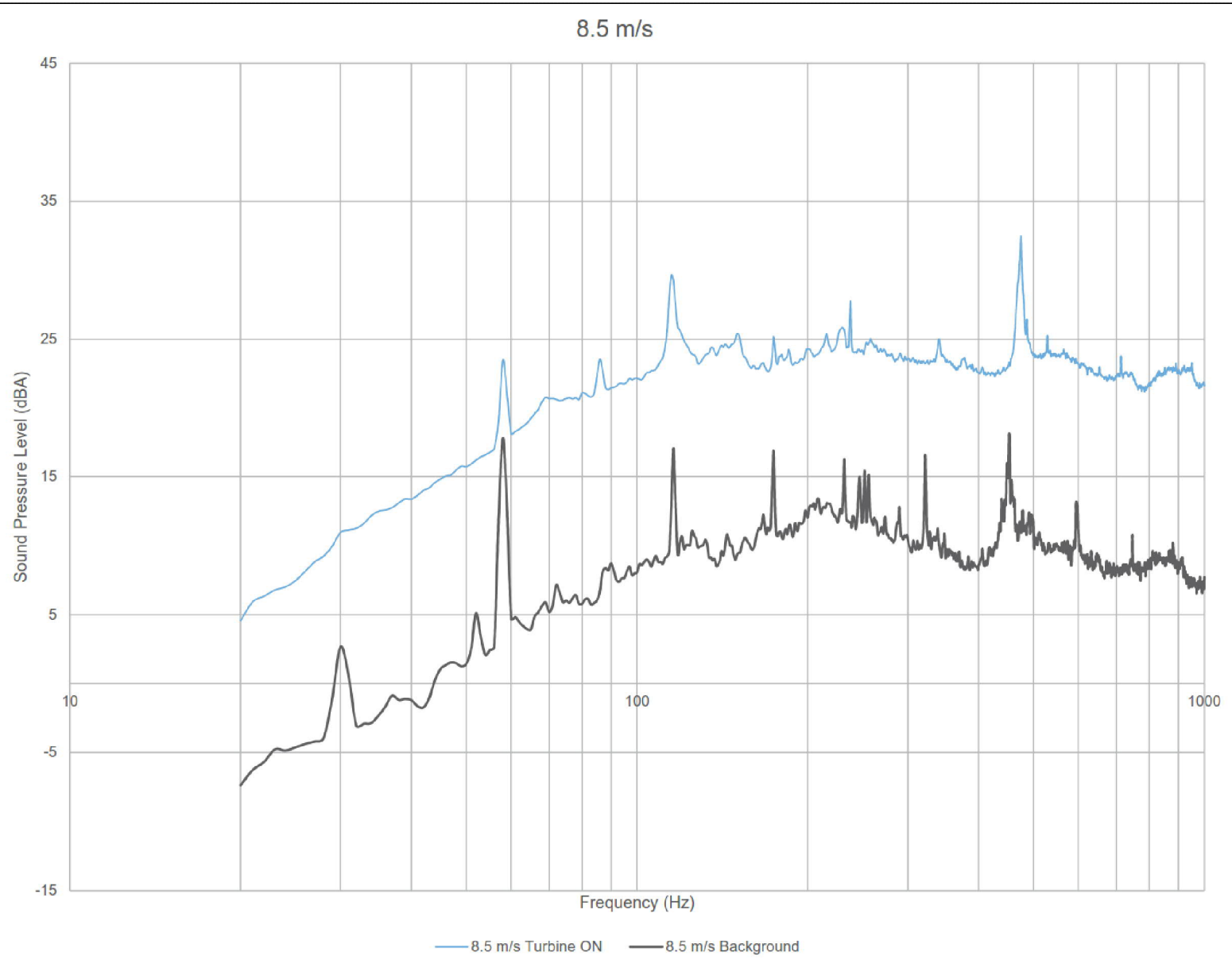
Appendix D
Tonality Assessment



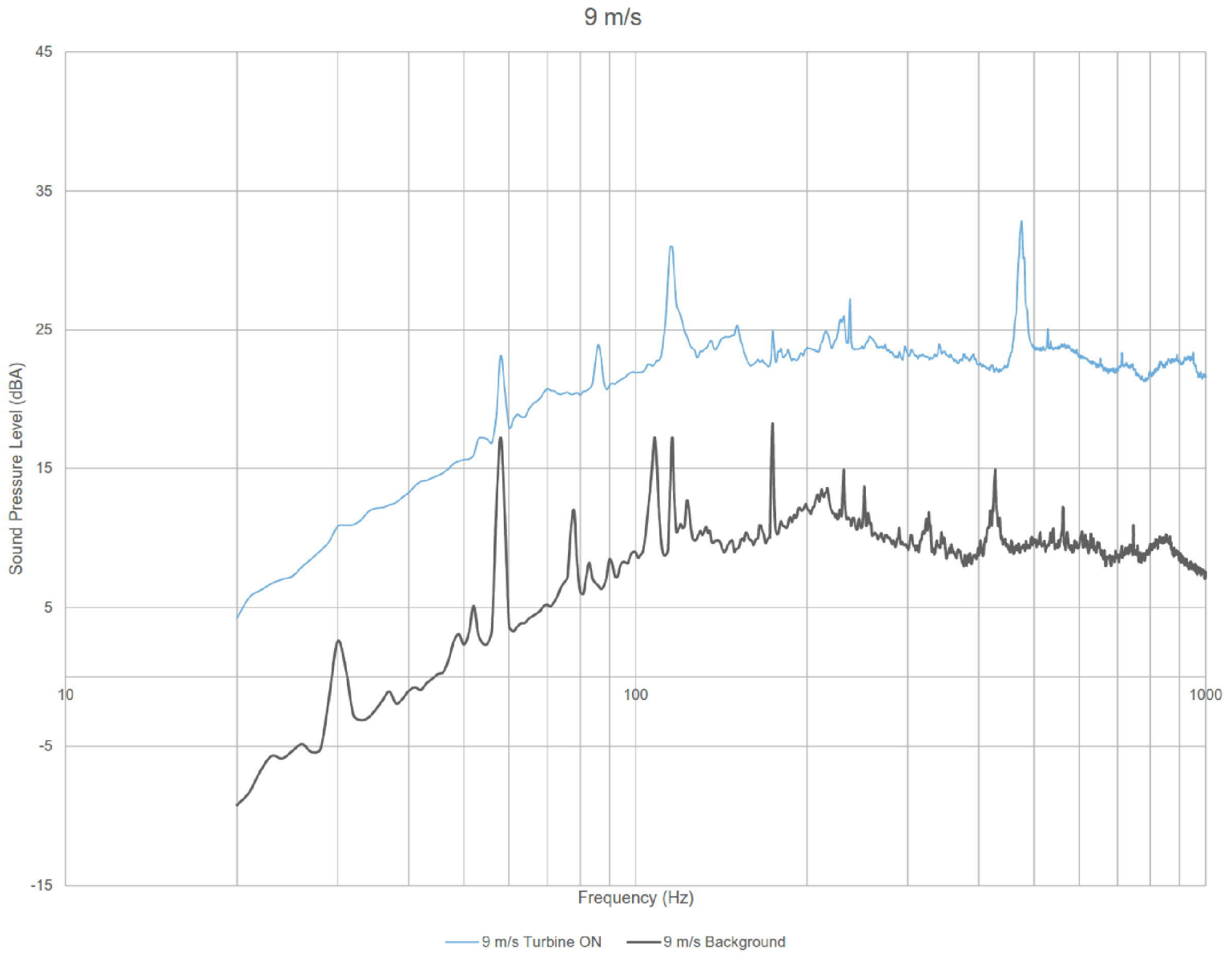
aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 7.5 m/s **Figure D.01**



aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0	
		Figure Title Plot of narrow band spectra - Turbine ON vs. Background at 8 m/s	**Figure D.02**

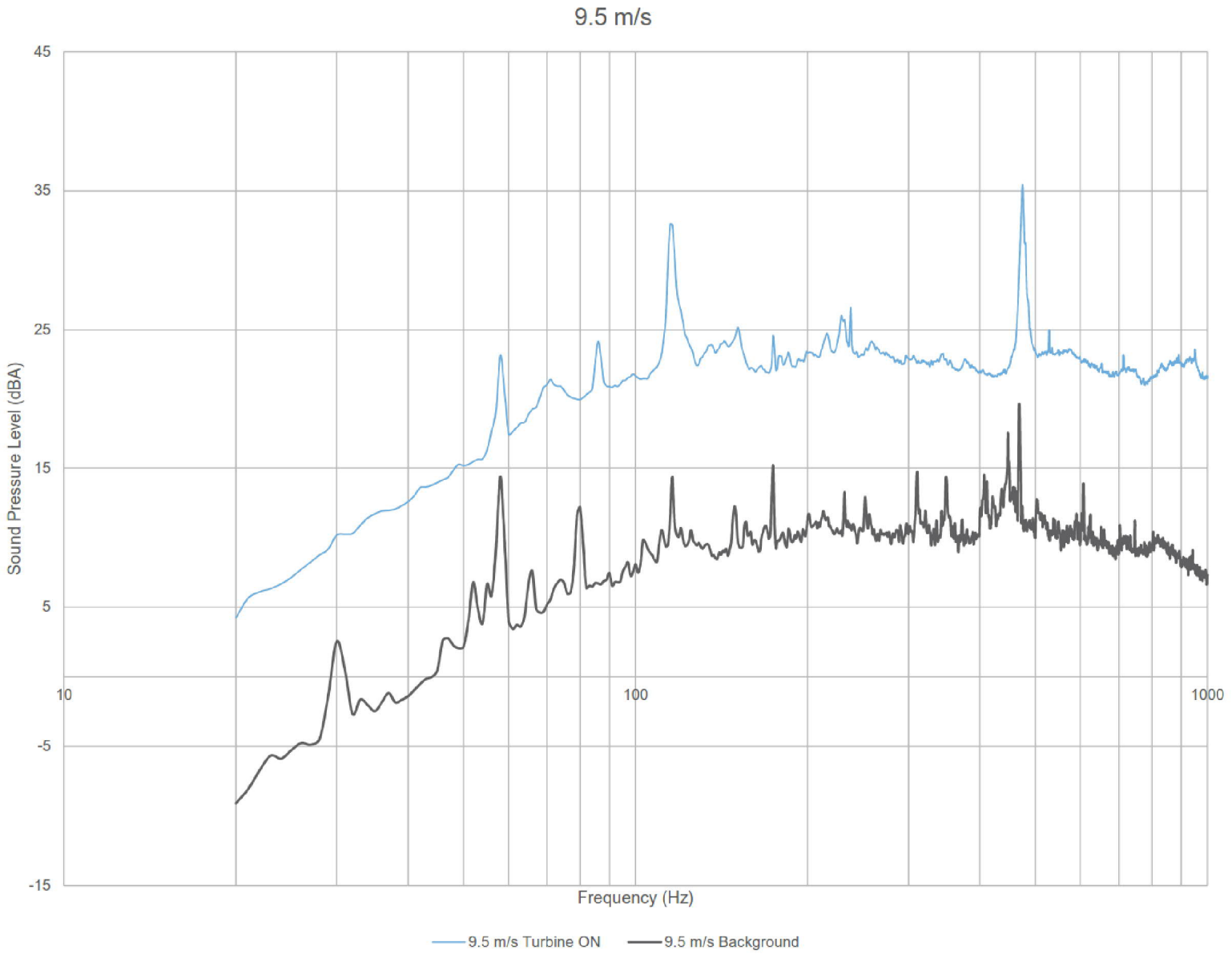


aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 8.5 m/s **Figure D.03**

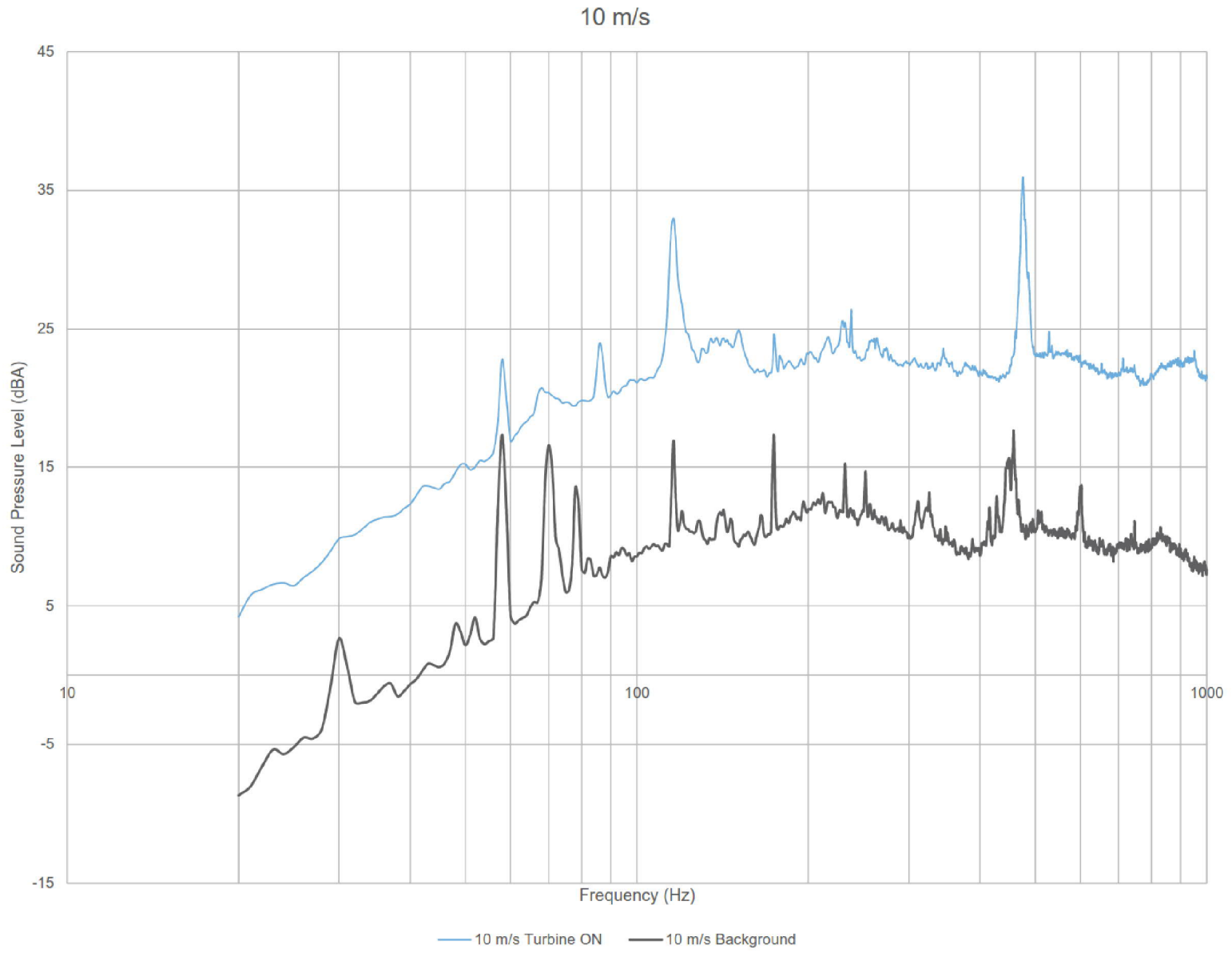


aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 9 m/s

Figure D.04

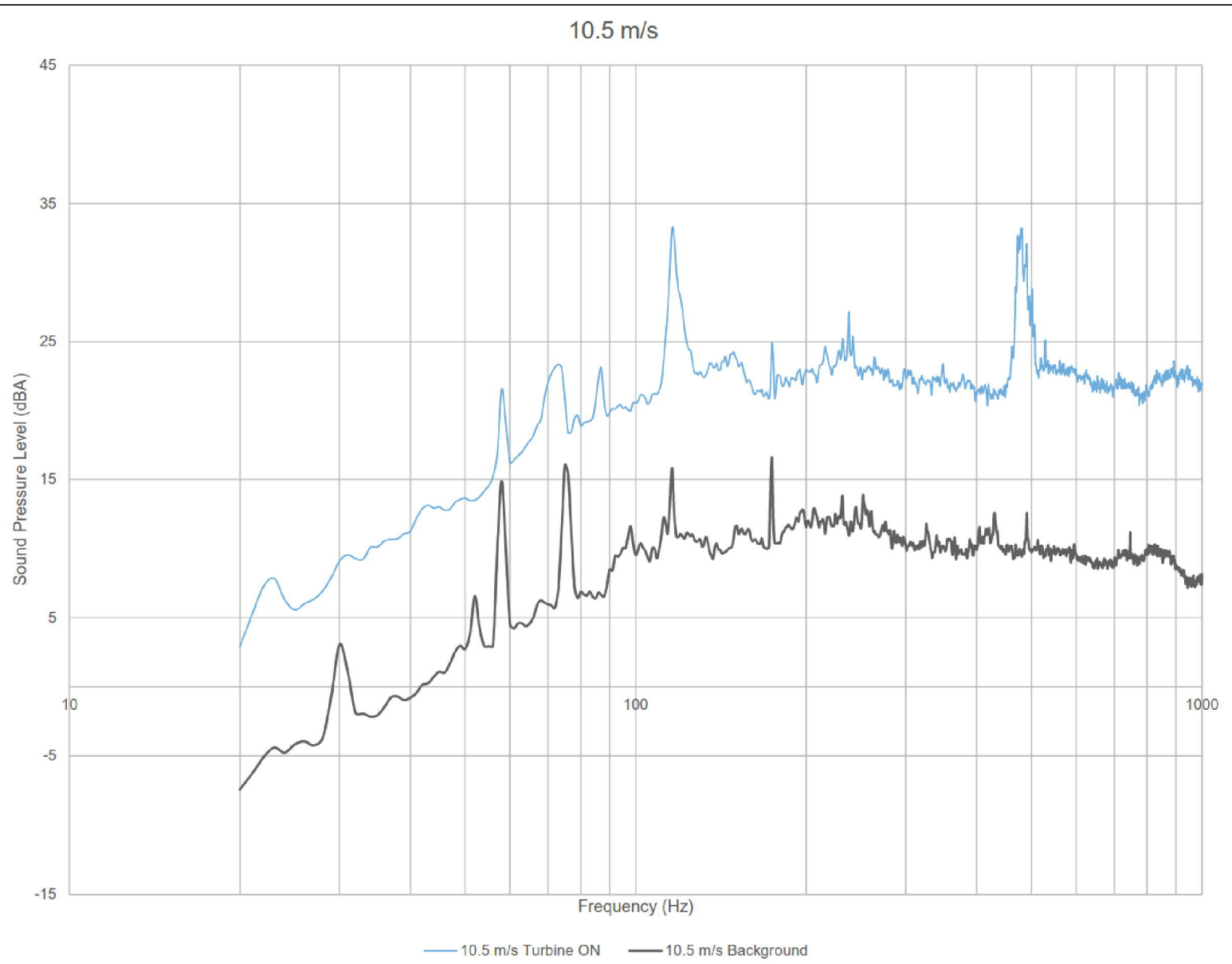


aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 9.5 m/s **Figure D.05**

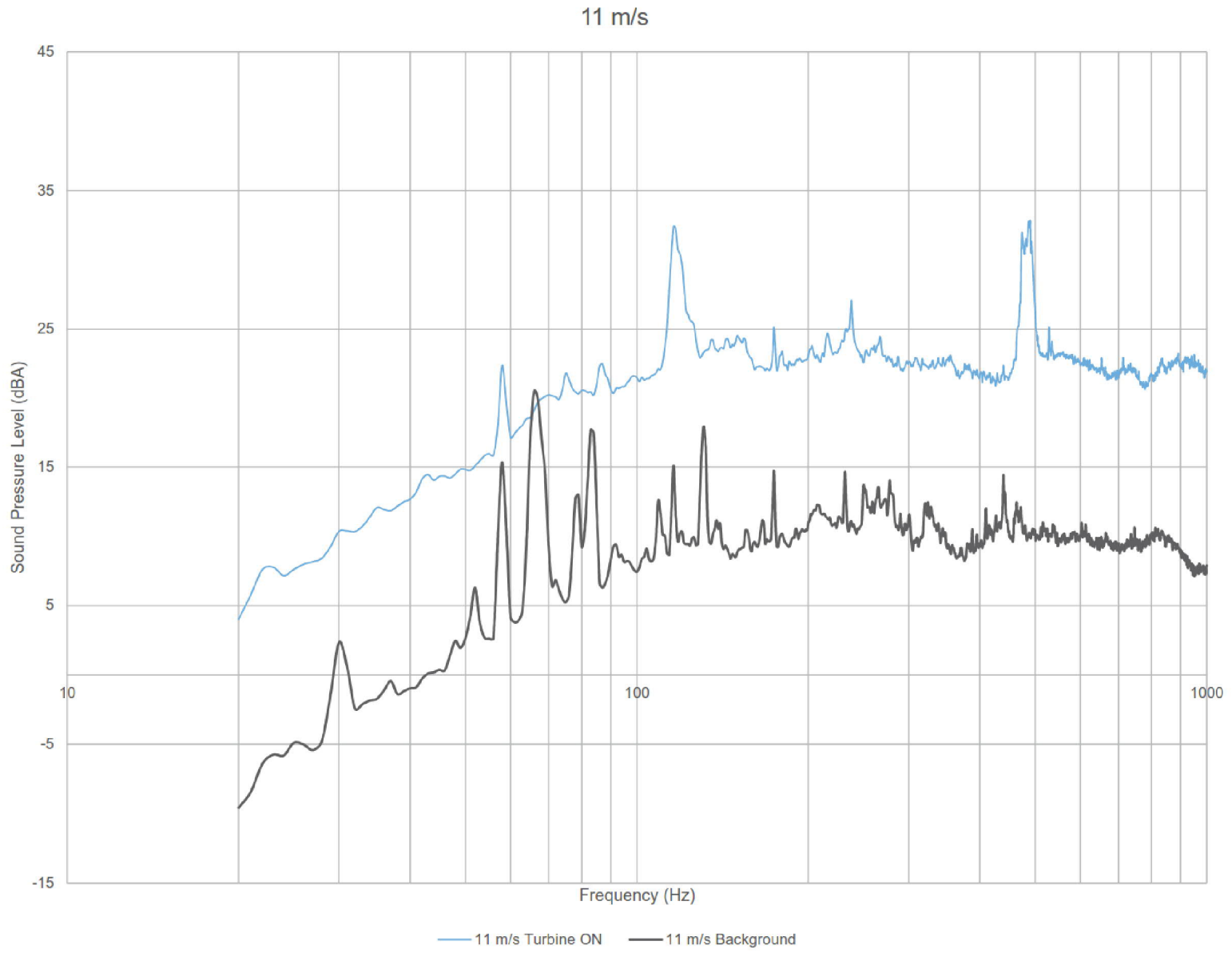


aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 10 m/s

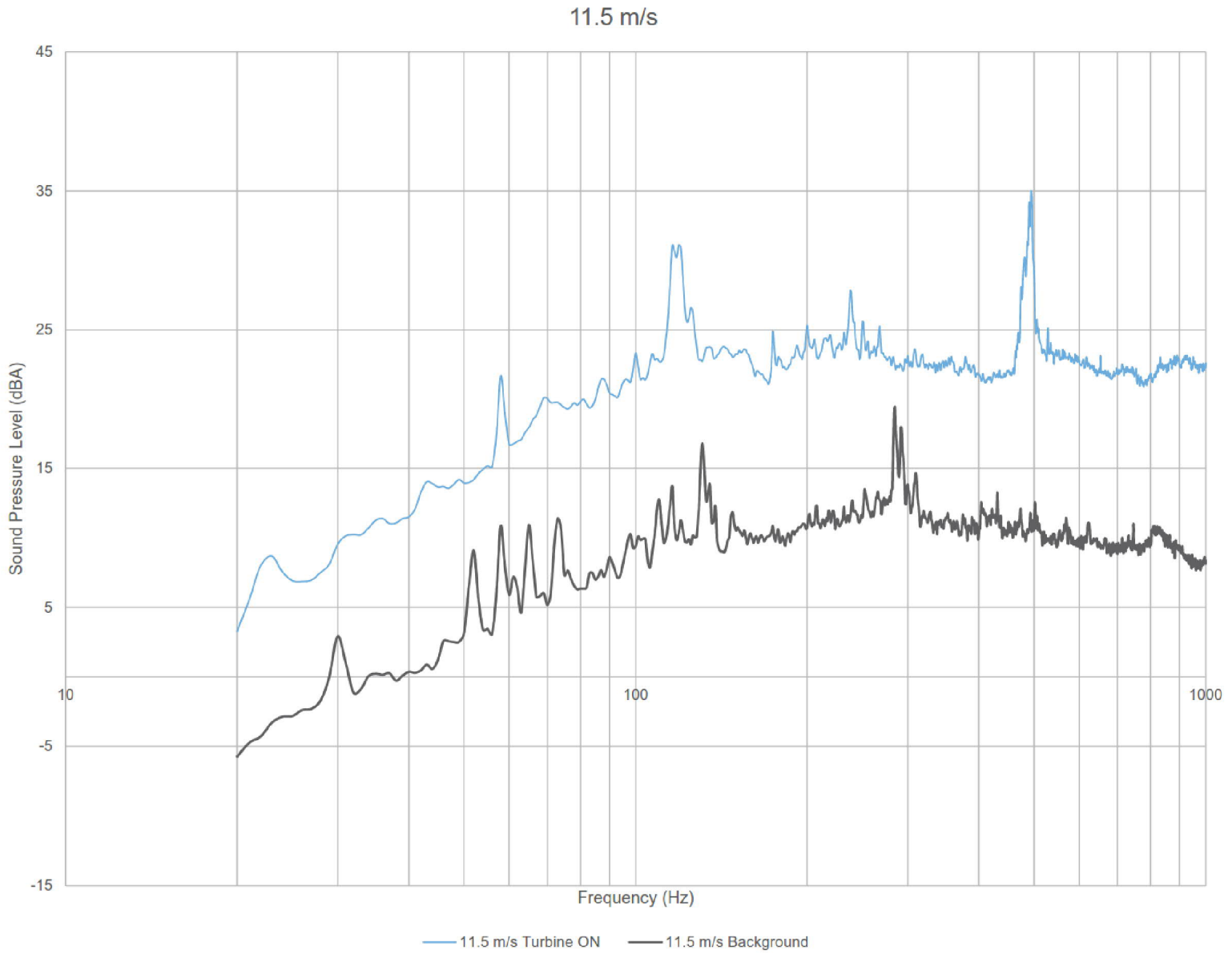
Figure D.06



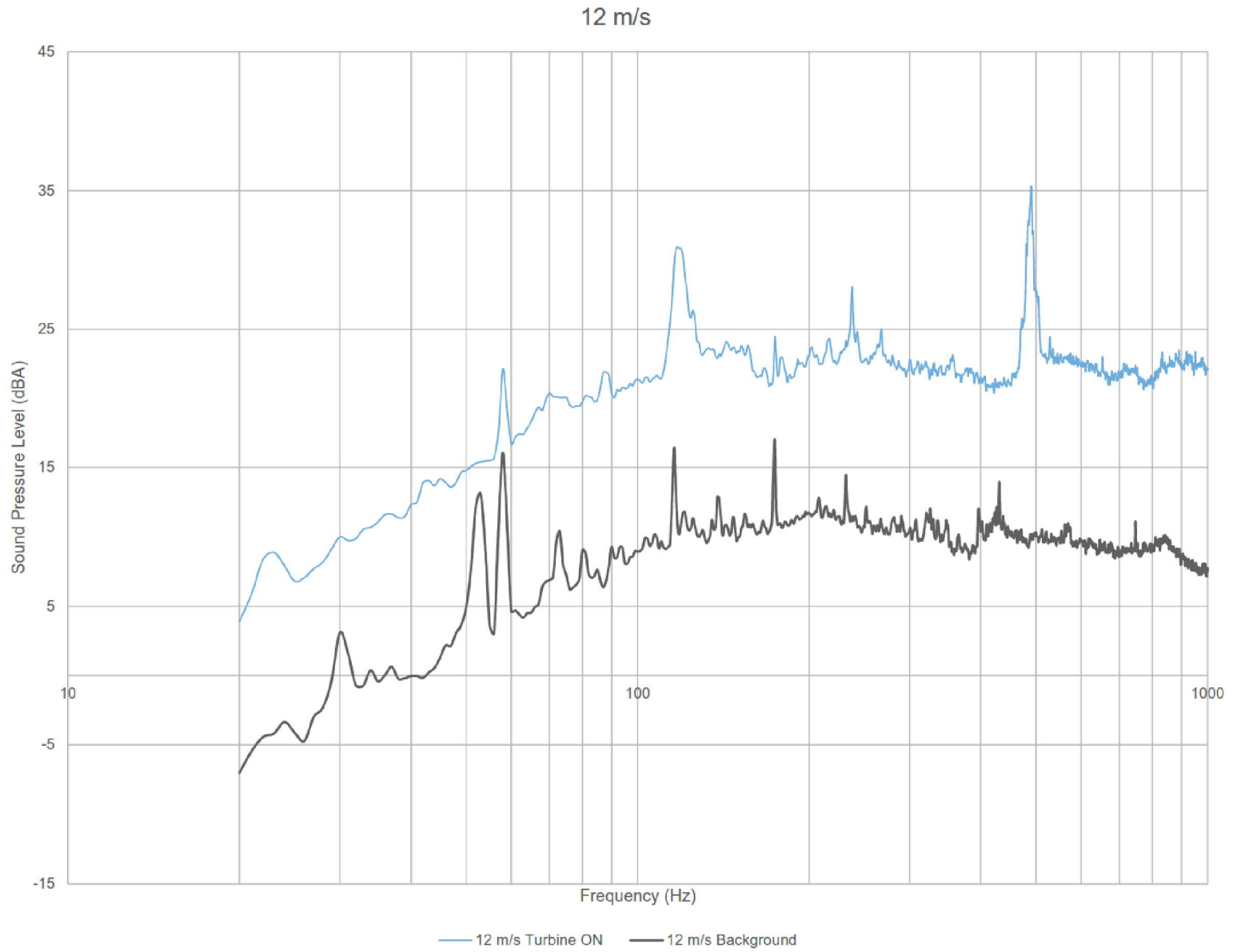
aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 10.5 m/s **Figure D.07**



aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 11 m/s **Figure D.08**

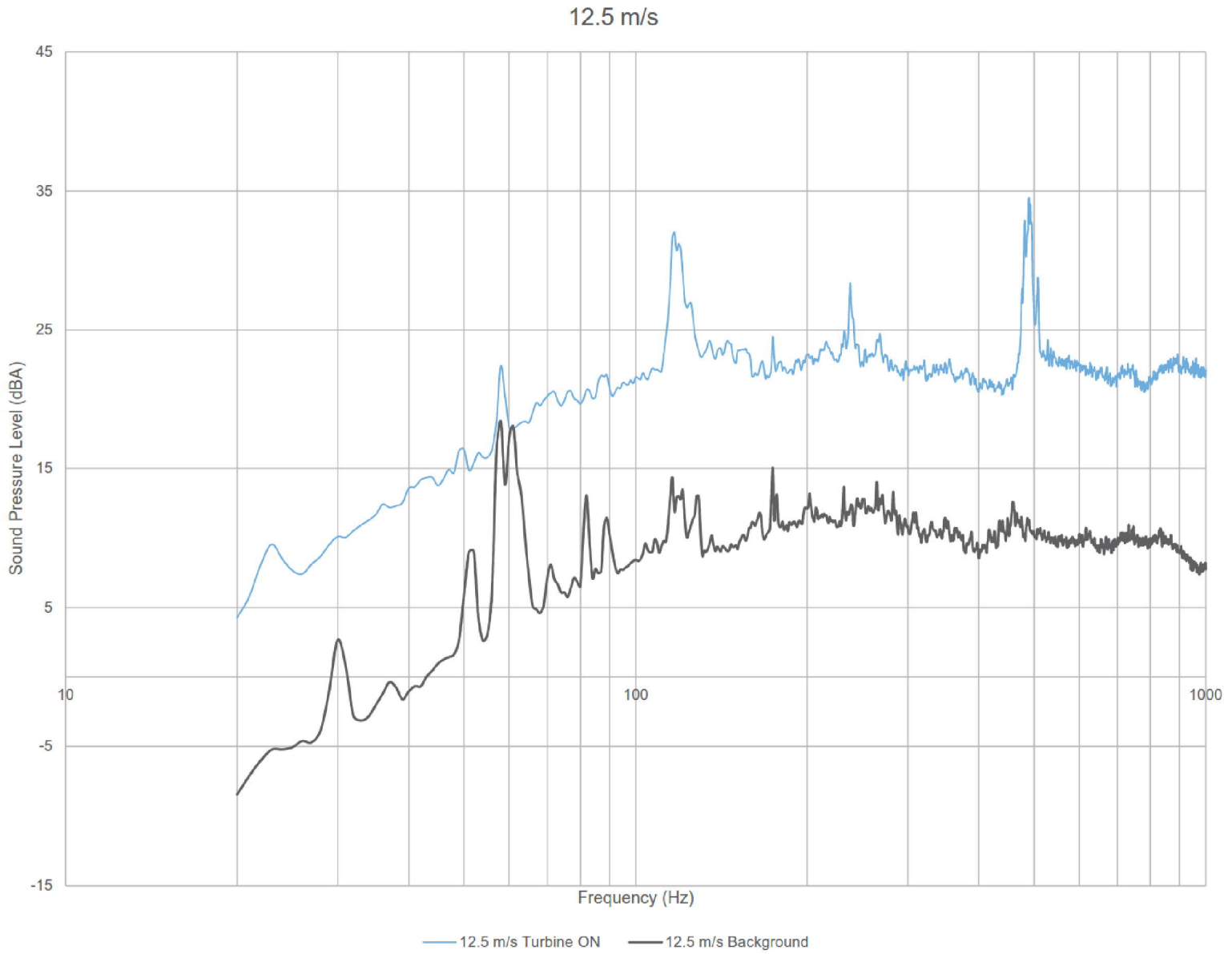


aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 11.5 m/s **Figure D.09**



aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 12 m/s

Figure D.10



aercoustics	14284.00.T58.RP1 Scale: NTS Drawn by: AD Reviewed by: PA Date: Feb 3, 2016 Revision: 1	**Project Name** Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 12.5 m/s

Figure D.11

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Appendix E
Measurement Data

Table E.01 Measurement data - Turbine ON

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 03/02/2016

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
1			2117	359.0	357.3	1.9	14.7	10.9	3.2	13	96.2	79
2			2128	359.0	357.3	1.9	14.7	10.5	3.5	13	96.2	79
3			2145	359.0	357.3	2.2	14.9	11.3	2.5	13	96.4	79
4			2141	359.0	357.3	3.5	15.0	11.9	2.3	13	96.6	79
5			2138	359.0	357.3	3.3	14.8	10.7	3.6	13	96.6	79
6			2140	359.0	357.3	2.3	14.8	10.8	2.5	13	96.6	79
7			2137	359.0	357.3	2.1	14.8	11.1	2.5	13	96.6	79
8			2073	359.0	357.3	1.6	14.4	10.7	3.2	13	96.6	79
9			1981	359.0	357.3	1.0	14.2	10.4	2.9	13	96.7	79
10			2048	359.0	357.3	1.4	14.4	10.2	2.5	13	96.7	79
11			2100	359.0	357.3	1.7	14.5	10.8	3.3	13	96.7	79
12			2107	359.0	357.3	1.7	14.6	10.8	3.6	13	96.7	79
13			2125	359.0	357.3	1.8	14.7	10.9	1.9	13	96.7	79
14			2038	359.0	357.3	1.4	14.3	10.6	3.8	13	96.7	79
15	10.1	54.2	1987	359.0	357.3	0.9	14.3	10.7	3.8	13	96.5	79
16	9.6	54.5	1843	359.0	357.3	0.1	14.2	9.9	3.3	13	96.4	79
17	9.1	54.5	1690	359.0	357.3	-1.0	14.2	9.0	3.3	13	96.4	79
18	8.8	54.3	1583	359.0	357.3	-1.8	14.2	8.2	3.0	13	96.4	79
19	9.4	54.8	1783	359.0	357.2	-0.5	14.4	9.4	3.1	13	96.4	79
20	9.4	54.6	1790	359.0	357.2	-0.3	14.3	9.2	3.6	13	96.4	79
21	9.7	54.9	1868	359.0	357.2	0.0	14.5	9.2	2.2	13	96.3	79
22	12.1	55.0	2111	359.0	357.2	1.9	14.6	11.3	1.7	13	96.3	79
23	12.3	54.6	2134	359.0	357.2	2.0	14.7	11.5	1.8	13	96.3	79
24	9.8	54.7	1919	359.0	357.2	0.6	14.2	10.3	1.8	13	96.3	79
25	9.7	55.1	1887	359.0	357.2	0.4	14.2	10.1	2.6	13	96.3	79
26	9.3	54.3	1737	359.0	357.3	-0.5	14.2	9.7	2.9	13	96.3	79
27	8.7	54.5	1497	359.0	357.3	-2.1	14.1	8.2	4.2	13	96.2	79
28	8.8	54.6	1554	359.0	357.2	-1.9	14.3	7.5	3.4	13	96.1	79
29	8.7	53.9	1508	359.0	357.3	-2.2	14.3	7.6	3.6	13	96.1	79
30	8.1	54.7	1262	359.0	357.3	-2.9	14.1	6.7	3.1	13	96.1	79
31	7.7	53.8	1056	359.0	357.3	-3.0	14.0	7.4	4.6	13	96.1	79
32	7.6	53.9	1048	359.0	357.2	-3.0	14.0	7.7	4.3	13	96.1	79
33	7.8	53.6	1096	359.0	357.2	-3.0	14.1	7.7	3.6	13	96.1	79
34	7.6	54.1	1041	359.0	357.2	-3.0	14.0	6.7	4.2	13	96.1	79
35	7.7	53.9	1094	359.0	357.2	-3.0	14.1	6.7	3.5	13	96.1	79
36	7.8	54.0	1116	359.0	357.3	-2.9	14.1	6.9	4.9	13	96.1	79
37	7.9	53.7	1153	359.0	357.3	-2.8	14.1	7.1	4.4	13	96.1	79
38	8.4	54.3	1401	359.0	357.5	-2.8	14.4	7.9	3.0	13	96.1	79
39	9.0	55.0	1648	359.0	359.7	-1.3	14.5	9.8	3.8	13	96.0	79
40	9.8	55.0	1901	359.0	359.9	0.4	14.5	8.7	1.9	13	95.9	79
41	9.6	54.4	1840	359.0	360.0	0.1	14.4	9.5	3.8	13	95.9	79
42	9.2	53.9	1720	359.0	360.0	-0.7	14.2	8.6	5.0	13	95.9	79
43	9.1	53.9	1696	359.0	359.4	-1.0	14.3	8.0	4.4	13	95.9	79
44	9.4	54.5	1788	359.0	357.4	-0.4	14.4	8.3	3.7	13	95.9	79
45	9.3	54.6	1747	359.0	357.4	-0.7	14.3	8.7	1.1	13	95.9	79
46	9.5	54.6	1810	359.0	357.4	-0.2	14.4	9.3	3.0	13	95.9	79
47	9.4	54.6	1775	359.0	357.4	-0.4	14.3	10.4	4.6	13	95.9	79
48	9.6	54.8	1840	359.0	357.4	0.0	14.4	9.7	4.7	13	95.9	79
49	9.3	55.1	1758	359.0	357.4	-0.5	14.3	8.9	4.0	13	95.9	79
50	9.1	54.4	1678	359.0	357.3	-1.2	14.2	8.6	3.8	13	95.9	79
51	9.5	54.1	1805	359.0	357.3	-0.2	14.4	9.5	4.0	13	96.0	79
52	9.4	54.9	1771	359.0	357.3	-0.4	14.3	9.5	3.3	13	96.1	79
53	9.2	54.6	1715	359.0	357.3	-0.8	14.3	9.7	3.0	13	96.1	79
54	9.8	53.8	1904	359.0	357.3	0.4	14.5	9.5	4.5	13	96.1	79
55	10.0	54.6	1978	359.0	357.3	0.9	14.4	9.4	5.0	13	96.1	79
56	9.6	54.4	1844	359.0	357.3	0.2	14.2	9.7	3.6	13	96.1	79
57	9.3	54.3	1756	359.0	357.3	-0.5	14.3	8.7	2.9	13	96.0	79
58	9.0	54.5	1639	359.0	357.3	-1.2	14.2	8.4	2.3	13	96.0	79
59	9.1	54.8	1696	359.0	357.3	-1.0	14.4	8.7	3.2	13	96.0	79
60	9.9	54.4	1958	359.0	357.3	0.7	14.5	10.5	5.3	13	96.0	79
61	9.9	54.7	1935	359.0	357.3	0.6	14.3	9.4	4.6	13	96.0	79
62	9.8	54.7	1928	359.0	357.3	0.6	14.3	9.9	5.3	13	96.0	79
63	9.3	54.1	1746	359.0	357.3	-0.5	14.2	9.1	4.6	13	95.9	79
64	8.8	54.1	1557	359.0	357.3	-1.8	14.2	8.8	4.4	13	95.9	66
65	9.2	54.7	1703	359.0	357.3	-0.9	14.4	8.9	4.2	13	96.2	34
66	9.2	54.4	1712	359.0	357.3	-0.9	14.3	8.8	4.2	13	99.4	72
67	9.2	54.3	1726	359.0	357.3	-0.7	14.3	9.7	4.0	13	99.4	72
68	9.3	54.2	1760	359.0	357.3	-0.6	14.4	9.6	2.7	13	99.4	72
69	9.7	54.3	1869	359.0	357.3	0.1	14.4	10.1	3.6	13	99.4	72
70	9.8	54.2	1926	359.0	357.3	0.6	14.4	10.0	2.2	13	99.4	72
71	9.0	54.5	1647	359.0	357.3	-1.2	14.1	7.8	2.7	13	99.4	72
72	8.3	54.1	1327	359.0	357.3	-3.0	14.1	8.1	1.6	13	99.4	72
73	8.4	54.8	1358	359.0	357.3	-3.0	14.3	7.8	1.9	13	99.4	72
74	8.4	55.5	1385	359.0	357.3	-2.9	14.3	7.7	4.3	13	99.4	72
75	8.0	54.7	1192	359.0	357.3	-3.0	14.1	7.6	3.8	13	99.4	72
76	8.2	53.9	1267	359.0	357.3	-3.0	14.3	7.8	5.1	13	99.4	73
77	8.2	54.7	1303	359.0	357.3	-3.0	14.3	7.9	3.6	13	99.4	73
78	7.7	54.8	1082	359.0	357.3	-3.0	13.9	7.1	2.1	13	99.4	73
79	8.0	53.9	1193	359.0	357.3	-3.0	13.2	6.9	2.1	13	99.4	73
80	7.3	52.7	900	359.0	357.3	-3.0	12.3	6.7	2.7	13	99.4	73
81	7.1	50.5	841	359.0	357.3	-3.0	12.1	6.8	3.5	13	99.4	72
82	7.1	50.7	815	359.0	357.3	-3.0	12.0	6.8	3.1	13	99.4	72
83	7.3	50.3	913	359.0	357.3	-2.8	12.4	7.3	4.0	13	99.4	72
84	7.5	51.0	999	359.0	357.3	-2.7	12.5	7.1	5.4	13	99.4	72
85	7.3	50.9	925	359.0	357.3	-2.7	12.4	6.7	4.3	13	99.4	72
86	7.1	50.1	827	359.0	357.3	-2.7	12.0	6.8	4.4	13	99.4	72
87	6.7	49.7	689	359.0	358.5	-2.7	11.4	6.4	3.4	13	99.4	71
88	6.5	49.1	626	359.0	359.8	-2.7	11.0	6.4	4.6	13	99.4	71

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
89	6.5	48.7	625	359.0	359.8	-2.9	11.0	6.0	4.7	13	99.4	71
90	6.4	49.5	600	359.0	359.9	-3.0	10.9	6.0	4.1	13	99.4	71
91	6.4	48.6	603	359.0	360.0	-3.0	10.9	5.3	2.5	13	99.4	71
92	6.5	47.9	634	359.0	360.0	-3.0	11.1	5.9	2.7	13	99.4	71
93	6.8	49.3	729	359.0	359.9	-3.0	11.6	6.2	3.2	13	99.4	72
94	6.6	49.5	663	359.0	357.8	-3.0	11.2	5.3	4.1	13	99.4	72
95	6.2	48.0	546	359.0	357.3	-2.8	10.5	5.2	3.7	13	99.4	72
96	6.0	47.1	495	359.0	358.6	-2.7	10.2	5.6	1.9	13	99.4	72
97	6.1	47.3	503	359.0	360.0	-2.7	10.2	5.7	1.1	13	99.4	72
98	6.1	47.1	523	359.0	360.0	-2.7	10.4	5.5	1.5	13	99.4	72
99	6.4	48.2	620	359.0	360.0	-2.7	11.0	6.3	2.7	13	99.4	73
100	6.8	49.4	738	359.0	360.0	-2.7	11.6	5.9	2.5	13	99.4	73
101	6.9	49.6	760	359.0	360.0	-2.9	11.7	6.2	3.5	13	99.4	73
102	6.7	49.3	689	359.0	360.0	-3.0	11.4	5.9	3.3	13	99.4	73
103	6.6	48.6	662	359.0	360.0	-3.0	11.2	6.1	4.3	13	99.4	73
104	7.0	49.7	788	359.0	360.0	-3.0	11.8	6.8	3.9	13	99.4	73
105	6.9	50.5	754	359.0	360.0	-3.0	11.7	6.3	4.0	13	99.4	72
106	6.4	48.5	603	359.0	360.0	-3.0	10.9	4.8	2.7	13	99.4	72
107	6.1	47.5	506	359.0	360.0	-2.8	10.3	4.4	3.0	13	99.4	72
108			487	359.0	280.3	-2.7	10.1	5.0	4.1	13	99.4	72
109	6.3	48.0	582	-1.0	2.8	-2.7	10.8	5.9	5.1	13	99.4	72
110	6.4	48.5	596	-1.0	3.1	-2.7	10.8	5.7	6.6	13	99.4	72
111	6.6	47.9	661	-1.0	3.1	-2.7	11.2	6.3	4.6	13	99.4	72
112	7.1	49.8	847	-1.0	3.1	-2.7	12.1	6.8	4.8	13	99.4	72
113	7.6	50.6	1037	-1.0	3.6	-2.9	12.6	7.2	3.7	13	99.4	72
114	7.5	51.6	994	-1.0	6.6	-3.0	12.6	6.9	4.0	13	99.4	72
115	7.6	51.5	1037	-1.0	7.0	-3.0	12.6	7.2	4.8	13	99.4	72
116	7.6	51.8	1030	-1.0	7.0	-3.0	12.6	7.2	3.8	13	99.4	72
117	7.8	51.8	1126	-1.0	7.0	-3.0	12.7	7.7	4.5	13	99.4	72
118	8.1	52.5	1240	-1.0	7.0	-3.0	13.3	8.5	3.7	13	99.4	72
119	8.1	53.8	1254	-1.0	7.0	-2.7	14.2	9.1	3.0	13	99.4	72
120	8.1	54.1	1245	-1.0	7.0	-2.7	14.2	7.1	3.8	13	99.4	72
121	8.3	54.4	1315	-1.0	7.0	-2.6	14.3	8.2	4.1	13	99.4	72
122	8.7	54.6	1497	-1.0	9.7	-1.9	14.4	8.7	3.8	13	99.4	72
123	8.6	54.3	1460	-1.0	10.5	-2.2	14.3	7.8	3.7	13	99.4	72
124	8.5	54.2	1433	-1.0	10.5	-2.3	14.3	7.9	3.1	13	99.4	71
125	8.7	54.7	1524	-1.0	10.5	-2.0	14.4	7.3	4.6	13	99.4	71
126	8.8	54.5	1576	-1.0	10.4	-1.8	14.4	8.6	5.5	13	99.4	71
127	9.3	54.6	1747	-1.0	10.4	-0.6	14.5	9.0	3.6	13	99.4	71
128	9.1	54.2	1673	-1.0	10.4	-1.1	14.3	9.0	2.6	13	99.4	71
129	8.8	53.9	1546	-1.0	10.4	-1.9	14.2	8.3	5.1	13	99.4	71
130	8.8	54.4	1540	-1.0	9.1	-2.0	14.3	8.2	6.1	13	99.4	71
131	8.8	54.4	1557	-1.0	7.4	-1.8	14.3	7.6	4.8	13	99.4	71
132	8.2	54.1	1296	-1.0	7.3	-2.8	14.1	6.4	4.6	13	99.4	71
133	8.2	53.8	1285	-1.0	5.5	-2.9	14.3	7.4	4.3	13	99.4	71
134	8.1	53.8	1258	-1.0	4.4	-3.0	14.2	7.1	3.2	13	99.4	71
135	8.1	54.2	1260	-1.0	4.4	-3.0	14.3	8.7	4.0	13	99.4	72
136	8.4	54.4	1382	-1.0	4.4	-2.8	14.3	8.4	3.7	13	99.4	72
137	8.7	54.5	1510	-1.0	4.4	-2.2	14.4	8.4	2.2	13	99.4	72
138	8.9	54.3	1628	-1.0	4.4	-1.3	14.4	7.8	4.0	13	99.4	72
139	8.5	54.1	1409	-1.0	4.4	-2.7	14.2	8.2	3.2	13	99.4	72
140	8.9	54.2	1595	-1.0	4.9	-1.6	14.5	8.8	2.4	13	99.4	72
141	9.1	54.6	1688	-1.0	7.9	-1.0	14.4	9.2	2.1	13	99.4	72
142	9.0	54.5	1632	-1.0	8.1	-1.4	14.3	9.1	3.6	13	99.4	72
143	8.7	54.3	1534	-1.0	8.2	-1.9	14.2	8.7	4.5	13	99.4	72
144	8.3	54.6	1340	-1.0	8.2	-2.8	14.1	8.8	5.1	13	99.4	72
145	7.7	54.3	1070	-1.0	8.2	-3.0	13.9	7.0	5.8	13	99.4	72
146	7.7	54.0	1090	-1.0	8.2	-3.0	12.9	6.0	4.4	13	99.4	72
147	7.4	51.3	953	-1.0	8.2	-3.0	12.5	5.9	3.8	13	99.4	72
148	8.0	51.7	1190	-1.0	8.2	-3.0	12.8	8.0	2.9	13	99.4	72
149	8.2	52.6	1275	-1.0	8.2	-2.6	13.9	9.6	2.8	13	99.4	72
150	8.5	54.3	1415	-1.0	8.2	-2.7	14.3	9.0	4.2	13	99.4	72
151	8.4	54.5	1394	-1.0	8.2	-2.7	14.3	8.5	5.1	13	99.4	72
152	8.2	54.6	1287	-1.0	8.2	-2.6	14.1	8.2	5.6	13	99.4	72
153	7.6	54.9	1045	-1.0	8.2	-3.0	14.0	7.1	5.3	13	99.4	71
154	7.9	54.8	1136	-1.0	8.2	-3.0	13.6	6.9	4.6	13	99.4	70
155	7.4	52.6	949	-1.0	8.2	-3.0	12.4	7.1	4.6	13	99.4	70
156	7.1	53.9	832	-1.0	8.2	-3.0	12.0	7.0	4.9	13	99.4	70
157	6.8	50.9	721	-1.0	8.2	-3.0	11.6	6.5	5.9	13	99.4	70
158	6.6	49.8	656	-1.0	8.2	-3.0	11.2	5.1	6.4	13	99.4	70
159	6.3	49.3	585	-1.0	6.8	-3.0	10.8	6.1	6.9	13	99.4	70
160	6.4	48.8	605	-1.0	4.9	-3.0	10.9	6.1	5.7	13	99.4	70
161	6.7	49.0	712	-1.0	4.9	-3.0	11.5	6.2	5.2	13	99.4	70
162	7.0	50.1	798	-1.0	4.4	-3.0	11.9	6.5	4.7	13	99.4	70
163	7.4	51.2	967	-1.0	2.1	-3.0	12.5	7.2	6.3	13	99.4	70
164	7.2	51.0	876	-1.0	2.0	-3.0	12.2	6.1	5.8	13	99.4	70
165	7.1	50.2	835	-1.0	2.0	-3.0	12.1	6.1	5.3	13	99.4	70
166	7.8	51.5	1121	-1.0	2.2	-3.0	12.7	8.3	4.5	13	99.4	70
167	8.1	52.4	1249	-1.0	4.9	-2.8	12.8	8.5	6.2	13	99.4	70
168	7.8	52.1	1097	-1.0	5.2	-2.7	12.7	7.2	6.2	13	99.4	70
169	7.7	51.5	1086	-1.0	5.2	-2.7	12.7	7.6	5.5	13	99.4	70
170	7.5	52.2	994	-1.0	5.3	-2.7	12.5	6.7	4.7	13	99.4	70
171	7.4	51.3	943	-1.0	5.3	-2.7	12.5	6.6	4.9	13	99.4	70
172	7.6	51.3	1045	-1.0	5.3	-2.7	12.6	6.7	3.3	13	99.4	70
173	8.0	52.2	1208	-1.0	5.3	-3.0	12.8	7.1	1.5	13	99.4	70
174	7.8	52.5	1123	-1.0	5.3	-3.0	12.7	6.9	4.7	13	99.4	70
175	7.3	52.0	923	-1.0	5.1	-3.0	12.5	6.6	5.4	13	99.4	70
176	7.8	51.4	1106	-1.0	2.4	-3.0	12.7	7.3	4.0	13	99.4	70

Table E.01 Measurement data - Turbine ON

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 03/02/2016

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
177	8.6	53.3	1473	-1.0	2.0	-1.6	14.2	9.7	3.3	13	99.4	71
178	9.6	55.3	1862	-1.0	2.0	-0.1	14.5	9.2	3.8	13	99.4	71
179	9.2	55.0	1726	-1.0	2.0	-0.7	14.3	8.2	3.7	13	99.4	71
180	8.9	54.4	1610	-1.0	2.0	-1.5	14.2	8.1	2.1	13	99.4	71
181	9.0	54.5	1667	-1.0	2.0	-1.0	14.3	8.4	2.9	13	99.4	71
182			1575	359.0	202.1	-1.7	14.2	8.0	3.8	13	99.4	71
183	8.7	55.1	1499	359.0	359.4	-2.3	14.3	7.9	3.9	13	99.4	72
184	8.6	54.5	1465	359.0	359.3	-2.4	14.3	8.2	5.1	13	99.4	72
185	8.8	55.1	1576	359.0	359.3	-1.8	14.4	8.6	3.8	13	99.4	72
186	8.9	54.7	1587	359.0	359.3	-1.8	14.4	8.1	4.5	13	99.4	72
187			1703	359.0	285.9	-0.8	14.4	7.7	3.8	13	99.4	72
188	9.4	54.2	1777	-1.0	1.9	-0.5	14.4	9.3	5.4	13	99.4	72
189	9.4	54.5	1771	-1.0	2.0	-0.5	14.3	9.1	4.3	13	99.4	72
190	9.1	54.1	1679	-1.0	2.0	-1.0	14.3	8.5	3.0	13	99.4	71
191	9.2	54.5	1735	-1.0	2.0	-0.6	14.3	9.5	1.9	13	99.4	71
192	8.9	54.5	1586	-1.0	2.0	-1.6	14.2	8.0	2.3	13	99.4	71
193	8.4	54.2	1364	-1.0	2.0	-2.6	14.1	7.3	2.8	13	99.4	71
194	7.8	54.0	1105	-1.0	3.0	-3.0	14.0	7.2	1.8	13	99.4	71
195	7.9	53.4	1147	-1.0	5.5	-3.0	13.1	6.3	1.8	13	99.4	72
196	7.1	51.4	819	-1.0	5.5	-3.0	12.0	6.4	2.6	13	99.4	72
197	6.9	50.5	761	-1.0	5.5	-3.0	11.7	6.4	3.2	13	99.4	72
198	7.1	50.5	829	-1.0	5.5	-3.0	12.0	6.7	4.1	13	99.4	72
199	7.4	51.1	934	-1.0	5.5	-3.0	12.4	7.2	3.7	13	99.4	72
200	7.7	51.4	1070	-1.0	5.5	-3.0	12.7	7.0	6.4	13	99.4	72
201	8.1	52.4	1233	-1.0	5.5	-3.0	13.2	8.4	6.9	13	99.4	71
202	8.4	54.3	1388	-1.0	5.5	-2.6	14.3	8.6	5.6	13	99.4	70
203	8.3	54.5	1335	-1.0	6.3	-3.0	14.2	7.4	4.2	13	99.4	70
204	8.0	54.1	1185	-1.0	8.2	-3.0	14.2	7.9	3.8	13	99.4	70
205	7.8	53.8	1106	-1.0	8.3	-3.0	14.1	7.6	5.1	13	99.4	70
206	7.7	53.5	1092	-1.0	8.3	-3.0	13.1	7.0	3.8	13	99.4	70
207	7.3	51.1	927	-1.0	8.3	-3.0	12.4	7.3	3.9	13	99.4	70
208	7.9	51.7	1146	-1.0	8.3	-3.0	12.7	6.8	4.7	13	99.4	70
209	8.1	52.2	1226	-1.0	8.3	-2.8	12.8	6.1	4.8	13	99.4	70
210	8.2	52.2	1292	-1.0	6.5	-2.7	12.9	7.2	4.4	13	99.4	70
211	8.2	52.5	1289	-1.0	5.1	-2.7	12.9	7.5	4.5	13	99.4	70
212	8.2	53.0	1281	-1.0	5.0	-2.7	13.1	7.1	3.7	13	99.4	70
213	8.1	53.2	1254	-1.0	5.0	-2.7	13.2	7.4	3.5	13	99.4	71
214	8.6	53.1	1456	-1.0	5.0	-1.5	14.3	9.4	3.8	13	99.4	71
215	8.9	54.3	1617	-1.0	3.7	-1.4	14.4	8.6	3.8	13	99.4	71
216	9.3	54.6	1748	-1.0	1.6	-0.6	14.4	9.0	3.8	13	99.4	71
217	9.1	54.7	1682	-1.0	1.6	-0.9	14.3	7.9	2.7	13	99.4	71
218	8.9	54.2	1624	-1.0	1.6	-1.4	14.3	7.6	2.9	13	99.4	71
219	8.4	53.6	1383	-1.0	1.6	-2.8	14.1	7.5	2.4	13	99.4	71
220	8.1	54.4	1231	-1.0	1.6	-3.0	14.2	7.7	2.3	13	99.4	71
221	7.8	54.5	1121	-1.0	1.6	-3.0	13.8	6.8	2.6	13	99.4	71
222	8.2	54.5	1293	359.0	357.6	-3.0	14.2	8.3	4.7	14	99.4	68
223	7.7	53.6	1078	359.0	357.6	-3.0	14.0	6.8	5.1	14	99.4	68
224	7.7	53.5	1090	359.0	357.6	-3.0	14.0	7.6	3.4	14	99.4	68
225	8.0	54.4	1182	359.0	357.6	-3.0	14.2	7.8	3.7	14	99.4	68
226	7.7	53.8	1083	359.0	357.6	-3.0	14.0	6.8	5.6	14	99.4	68
227	7.9	52.6	1173	359.0	357.6	-3.0	13.0	6.9	3.9	14	99.4	68
228	7.6	51.9	1016	359.0	356.9	-3.0	12.6	7.1	4.8	14	99.4	68
229	7.6	51.6	1020	359.0	354.7	-3.0	12.6	6.9	4.7	14	99.4	68
230	7.1	51.3	845	359.0	354.7	-3.0	12.1	6.6	3.0	14	99.4	68
231	6.7	50.3	700	359.0	355.2	-2.7	11.4	5.7	2.1	14	99.4	68
232	6.8	50.0	732	359.0	358.6	-2.7	11.6	6.6	2.6	14	99.4	68
233	7.8	51.7	1114	359.0	359.2	-2.7	12.7	8.1	3.2	14	99.4	68
234	7.4	51.7	962	359.0	359.2	-2.7	12.5	6.9	2.9	14	99.4	68
235	7.1	50.5	820	359.0	359.2	-2.7	12.0	5.6	3.9	14	99.4	68
236			682	-1.0	215.8	-2.7	11.3	6.2	2.6	14	99.4	68
237	6.5	49.2	629	-1.0	4.1	-3.0	11.0	5.6	1.2	14	99.4	69
238	6.4	49.1	595	-1.0	4.5	-3.0	10.8	5.4	2.0	14	99.4	69
239	6.4	48.5	623	-1.0	4.5	-3.0	11.0	5.3	1.9	14	99.4	69
240	7.1	49.9	817	-1.0	3.9	-3.0	12.0	6.2	1.4	14	99.4	69
241			829	-1.0	213.6	-3.0	12.0	6.8	2.5	14	99.4	69
242	7.0	50.1	789	359.0	359.9	-3.0	11.8	6.5	4.0	14	99.4	69
243	7.3	50.4	920	359.0	359.9	-2.8	12.4	7.1	4.3	14	99.4	68
244	7.8	52.0	1115	359.0	359.8	-2.7	12.7	7.1	4.9	14	99.4	67
245	8.0	52.1	1205	359.0	357.5	-2.7	12.8	7.1	3.9	14	99.4	67
246	7.7	51.4	1090	359.0	357.0	-2.7	12.7	7.3	3.8	14	99.4	67
247	7.6	51.5	1051	359.0	357.0	-2.7	12.6	7.1	3.4	14	99.4	67
248	8.0	51.5	1177	359.0	357.0	-2.7	12.8	7.5	3.5	14	99.4	67
249	7.5	51.9	987	359.0	357.0	-3.0	12.6	7.0	5.1	14	99.4	68
250	7.6	51.7	1016	359.0	357.0	-3.0	12.6	6.5	4.9	14	99.4	68
251			1109	-1.0	193.1	-3.0	12.7	8.0	4.7	14	99.4	68
252	7.7	51.7	1090	-1.0	0.9	-3.0	12.7	7.3	3.8	14	99.4	68
253	8.0	51.9	1211	-1.0	1.0	-3.0	12.8	6.7	4.4	14	99.4	68
254	8.2	51.7	1273	-1.0	3.8	-3.0	12.9	7.3	4.6	14	99.4	68
255	8.2	52.3	1280	-1.0	4.3	-2.8	12.9	8.2	5.0	14	99.4	67
256	8.1	52.2	1246	-1.0	5.3	-2.7	13.2	7.9	4.9	14	99.4	67
257	7.9	52.9	1171	-1.0	7.8	-2.6	13.8	7.2	5.4	14	99.4	67
258	8.8	54.2	1560	-1.0	7.9	-1.7	14.4	8.9	4.3	14	99.4	67
259	8.6	54.8	1486	-1.0	10.4	-2.0	14.3	8.4	6.6	14	99.4	67
260	8.5	54.3	1445	-1.0	10.7	-2.2	14.3	9.4	4.3	14	99.4	67
261	7.8	53.9	1113	-1.0	10.7	-2.9	14.0	7.8	5.7	14	99.4	67
262	7.8	53.6	1104	-1.0	10.7	-3.0	13.7	6.9	4.8	14	99.4	67
263	7.4	52.6	949	-1.0	10.7	-3.0	12.3	6.5	5.3	14	99.4	67
264	7.1	51.3	846	-1.0	10.7	-3.0	12.1	6.3	4.9	14	99.4	67

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
265	7.0	50.9	792	-1.0	10.7	-3.0	11.8	6.2	4.5	14	99.4	67
266	7.0	50.6	811	-1.0	10.7	-3.0	11.9	6.1	5.9	14	99.4	67
267	7.4	51.4	944	-1.0	10.7	-3.0	12.4	5.8	5.8	14	99.4	67
268	8.1	52.0	1232	-1.0	8.1	-3.0	12.8	7.0	4.0	14	99.4	67
269	7.9	52.4	1164	-1.0	6.3	-3.0	12.7	7.3	3.3	14	99.4	67
270	7.8	52.0	1102	-1.0	6.3	-3.0	12.7	6.9	1.4	14	99.4	67
271	8.1	52.5	1246	-1.0	6.3	-3.0	13.1	8.1	2.6	14	99.4	67
272	8.9	53.5	1588	-1.0	6.3	-1.3	14.5	8.7	4.0	14	99.4	67
273	9.3	54.4	1743	-1.0	6.3	-0.6	14.4	8.5	5.0	14	99.4	67
274	9.0	54.0	1634	-1.0	6.3	-1.4	14.3	8.5	4.6	14	99.4	68
275	8.9	54.3	1609	-1.0	6.3	-1.5	14.3	8.7	3.4	14	99.4	68
276	9.0	54.4	1658	-1.0	6.3	-1.3	14.4	9.0	4.5	14	99.4	68
277	8.8	53.9	1584	-1.0	6.3	-1.7	14.2	8.1	4.8	14	99.4	68
278	8.6	54.3	1473	-1.0	6.3	-2.4	14.2	8.3	3.8	14	99.4	68
279	8.6	54.5	1482	-1.0	6.3	-2.5	14.4	7.4	3.6	14	99.4	68
280	9.0	54.6	1659	-1.0	6.3	-1.3	14.5	8.3	5.8	14	99.4	68
281	9.3	54.7	1760	-1.0	6.3	-0.4	14.4	9.3	5.5	14	99.4	68
282	9.0	54.3	1647	-1.0	6.3	-1.2	14.3	9.6	4.9	14	99.4	68
283	8.8	54.0	1554	-1.0	6.3	-1.9	14.2	8.2	5.3	14	99.4	68
284	8.5	54.1	1426	-1.0	6.3	-2.8	14.2	8.1	5.8	14	99.4	68
285	8.6	54.4	1463	-1.0	6.3	-2.5	14.3	7.9	4.0	14	99.5	67
286	8.0	54.2	1210	-1.0	6.3	-3.0	14.1	6.4	3.8	14	99.5	66
287	8.2	54.0	1295	-1.0	6.3	-2.9	14.3	6.5	2.7	14	99.5	66
288	8.0	54.2	1196	-1.0	6.3	-3.0	14.2	7.4	6.0	14	99.5	66
289	7.9	54.1	1174	-1.0	6.3	-2.9	14.2	7.4	4.9	14	99.5	66
290	8.2	54.2	1300	-1.0	6.3	-3.0	14.3	8.0	4.5	14	99.5	66
291	8.3	54.4	1331	-1.0	6.3	-3.0	14.3	8.5	4.1	14	99.5	66
292	8.2	54.5	1270	-1.0	6.3	-3.0	14.3	7.7	3.5	14	99.4	65
293	7.9	54.7	1174	-1.0	6.0	-2.9	14.2	7.7	4.9	14	99.4	65
294	7.7	54.1	1060	-1.0	2.4	-2.9	14.0	6.3	5.4	14	99.4	65
295	8.0	53.3	1177	-1.0	1.6	-3.0	13.2	7.1	5.1	14	99.4	65
296	7.1	52.0	829	-1.0	1.6	-3.0	12.0	5.1	5.2	14	99.4	65
297	6.6	52.7	658	-1.0	1.6	-2.8	11.2	5.2	5.1	14	99.4	65
298	6.5	50.3	624	-1.0	1.6	-2.7	11.1	6.4	4.4	14	99.4	65
299	6.9	51.6	767	-1.0	1.7	-2.7	11.8	5.8	3.6	14	99.4	65
300			829	359.0	164.2	-2.7	12.1	6.1	3.3	14	99.4	65
301	7.4	51.4	959	359.0	358.4	-2.7	12.5	7.2	4.3	14	99.4	65
302	7.5	51.4	1011	359.0	358.4	-2.7	12.6	6.6	3.8	14	99.4	65
303	7.6	51.5	1015	359.0	358.4	-3.0	12.6	6.9	3.0	14	99.4	66
304	7.4	51.7	937	359.0	358.4	-3.0	12.4	6.7	3.6	14	99.4	67
305	7.4	51.3	948	359.0	358.4	-3.0	12.5	6.6	2.3	14	99.4	67
306	7.4	51.5	963	359.0	358.4	-3.0	12.5	6.5	2.6	14	99.4	67
307	7.4	51.8	967	359.0	356.4	-3.0	12.5	6.6	2.6	14	99.4	67
308	7.8	52.6	1124	359.0	355.7	-3.0	12.7	7.6	2.0	14	99.4	67
309	8.2	52.8	1267	359.0	355.7	-2.8	12.9	8.1	2.4	14	99.5	67
310	8.4	53.7	1365	359.0	355.7	-2.0	14.1	9.4	1.7	14	99.5	67
311	8.9	54.5	1619	359.0	355.7	-1.1	14.4	9.1	1.8	14	99.5	67
312	8.1	54.2	1233	359.0	355.7	-2.5	14.0	7.8	3.7	14	99.5	67
313	7.7	53.3	1069	359.0	355.7	-2.7	12.8	6.6	2.2	14	99.5	67
314	7.9	52.0	1152	359.0	355.7	-2.6	12.9	7.7	1.9	14	99.5	67
315	9.0	53.9	1636	359.0	355.7	-0.5	14.5	10.0	1.6	14	99.5	67
316	8.9	54.1	1627	359.0	355.7	-1.3	14.3	8.7	2.7	14	99.5	67
317	9.5	54.5	1822	359.0	355.7	-0.2	14.5	8.9	1.9	14	99.5	67
318	9.4	54.3	1774	359.0	355.7	-0.5	14.3	9.2	3.3	14	99.5	67
319	9.4	54.7	1770	359.0	355.7	-0.4	14.3	9.0	3.7	14	99.5	67
320	9.5	54.1	1813	359.0	355.6	-0.3	14.4	9.5	3.1	14	99.5	67
321	9.7	54.1	1869	359.0	355.6	0.4	14.3	9.8	4.2	14	99.5	67
322	8.6	54.1	1452	359.0	355.6	-2.3	14.0	7.9	4.1	14	99.4	67
323	8.6	54.3	1471	359.0	355.7	-2.5	14.3	7.5	3.2	14	99.4	67
324	8.5	54.2	1445	359.0	355.7	-2.5	14.3	7.8	2.7	14	99.4	67
325	8.1	54.1	1261	359.0	355.7	-3.0	14.1	7.5	1.8	14	99.4	67
326	7.7	53.8	1055	359.0	355.7	-3.0	13.9	7.0	2.3	14	99.4	67
327	7.4	52.7	971	359.0	355.8	-3.0	12.4	5.6	2.7	14	99.5	67
328	6.3	49.5	589	359.0	358.0	-3.0	10.8	5.1	5.3	14	99.5	67
329	6.2	47.5	544	359.0	358.4	-3.0	10.5	6.1	5.3	14	99.5	67
330	6.4	48.2	613	359.0	358.4	-3.0	11.0	5.9	5.4	14	99.5	67
331	6.6	48.6	659	359.0	358.4	-3.0	11.2	6.1	5.9	14	99.5	67
332	7.0	50.0	805	359.0	358.3	-3.0	11.9	7.4	4.6	14	99.5	67
333	7.5	50.3	986	359.0	358.3	-3.0	12.5	6.9	2.9	14	99.4	67
334	7.9	51.9	1153	359.0	358.3	-3.0	12.7	7.4	2.7	14	99.4	67
335	7.4	52.2	971	359.0	358.1	-3.0	12.5	6.5	3.4	14	99.4	67
336	7.2	51.1	874	359.0	355.4	-3.0	12.3	6.5	4.7	14	99.4	67
337	7.1	50.5	842	359.0	355.1	-3.0	12.1	7.0	2.3	14	99.4	67
338	7.1	50.9	849	359.0	355.1	-3.0	12.1	7.4	2.7	14	99.4	67
339	7.1	50.7	812	359.0	355.1	-2.8	12.0	6.5	1.9	14	99.4	67
340	7.0	50.9	810	359.0	355.1	-2.7	12.0	6.5	1.1	14	99.4	68
341	7.2	50.6	858	359.0	355.1	-2.7	12.2	6.7	2.0	14	99.4	68
342	7.3	51.5	910	359.0	355.5	-2.7	12.4	6.7	3.6	14	99.4	68
343	7.2	51.3	883	359.0	358.5	-2.7	12.3	6.6	4.0	14	99.4	68
344	7.6	51.6	1025	359.0	358.7	-2.7	12.6	7.7	4.6	14	99.4	68
345	7.8	52.2	1104	359.0	358.7	-3.0	12.7	7.5	4.3	14	99.4	67
346	7.5	51.5	983	359.0	358.7	-3.0	12.5	7.1	3.7	14	99.4	67
347	8.0	52.1	1215	359.0	358.7	-3.0	12.9	7.0	2.9	14	99.4	67
348			1284	-1.0	123.9	-2.6	13.9	8.1	2.5	14	99.4	67
349	8.8	54.0	1580	-1.0	1.9	-2.1	14.4	8.3	2.8	14	99.4	67
350	8.9	54.5	1590	-1.0	2.0	-2.0	14.4	7.3	3.2	14	99.4	67
351	9.2	54.5	1714	-1.0	5.0	-1.0	14.5	7.1	2.7	14	99.4	66
352	9.8	54.6	1930	-1.0	6.4	0.5	14.5	8.6	3.1	14	99.4	66

Table E.01 Measurement data - Turbine ON

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 03/02/2016

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
353	9.7	54.2	1884	-1.0	6.5	0.4	14.3	8.7	4.8	14	99.4	66
354	9.5	54.3	1807	-1.0	6.9	-0.1	14.2	9.0	5.6	14	99.4	66
355	8.9	54.8	1597	-1.0	9.2	-1.5	14.1	8.3	3.0	14	99.4	66
356	8.5	54.9	1447	-1.0	9.3	-2.5	14.2	8.5	4.9	14	99.4	66
357	8.5	55.0	1432	-1.0	9.3	-2.7	14.3	9.2	5.0	14	99.4	66
358	8.3	54.6	1345	-1.0	9.3	-2.7	14.2	7.0	6.3	14	99.4	66
359	8.0	54.1	1177	-1.0	9.3	-2.9	14.2	7.2	5.7	14	99.4	66
360	8.1	54.2	1231	-1.0	9.3	-2.9	14.2	7.2	4.3	14	99.4	66
361	8.5	54.1	1420	-1.0	9.3	-2.5	14.4	7.9	4.4	14	99.4	66
362	8.4	54.8	1369	-1.0	9.3	-2.8	14.3	7.6	4.5	14	99.4	66
363	8.5	54.1	1445	-1.0	9.4	-2.4	14.4	7.8	5.8	14	99.4	65
364	8.6	54.2	1486	-1.0	9.4	-2.3	14.4	7.7	5.0	14	99.4	65
365	8.5	54.4	1409	-1.0	9.4	-2.7	14.2	7.4	3.2	14	99.4	65
366	8.2	54.9	1275	-1.0	9.4	-2.9	14.2	7.6	4.3	14	99.4	65
367	8.3	54.8	1356	-1.0	9.4	-2.8	14.3	7.7	5.2	14	99.4	65
368	7.8	53.7	1102	-1.0	9.9	-3.0	13.8	6.7	3.2	14	99.4	65
369	7.8	53.8	1108	-1.0	12.4	-3.0	12.7	6.8	3.7	14	99.4	66
370	7.2	53.2	870	-1.0	12.6	-3.0	12.2	6.6	4.2	14	99.4	66
371	7.0	50.6	780	-1.0	12.6	-3.0	11.8	6.1	3.9	14	99.4	66
372	6.8	50.7	716	-1.0	12.6	-3.0	11.5	6.2	4.3	14	99.4	66
373	6.5	52.4	626	-1.0	12.6	-3.0	11.1	6.2	2.9	14	99.4	66
374	6.4	48.7	603	-1.0	12.6	-3.0	10.9	6.3	3.5	14	99.4	66
375	6.2	47.9	538	-1.0	12.6	-2.7	10.4	5.0	3.7	14	99.4	66
376	6.1	52.5	515	-1.0	12.6	-2.7	10.3	5.2	4.0	14	99.4	66
377	6.7	51.9	707	-1.0	12.6	-2.7	11.5	7.3	3.4	14	99.4	66
378	7.5	53.3	1007	-1.0	12.6	-2.7	12.5	7.7	3.1	14	99.4	66
379	7.8	54.3	1130	-1.0	12.6	-2.7	12.7	8.1	4.4	14	99.4	66
380	8.1	54.2	1232	-1.0	12.6	-2.5	13.5	9.2	3.5	14	99.4	66
381	9.0	55.5	1642	-1.0	12.6	-1.3	14.5	8.3	4.8	14	99.4	65
382	9.4	55.5	1788	-1.0	12.6	-0.4	14.5	8.9	3.2	14	99.4	65
383	9.7	55.8	1897	-1.0	12.7	0.4	14.4	10.5	2.6	14	99.4	65
384	12.4	55.0	2054	-1.0	12.7	1.3	14.4	11.7	3.1	14	99.4	65
385	9.8	53.9	1914	-1.0	12.7	0.6	14.2	10.1	4.5	14	99.4	65
386	9.8	53.8	1929	-1.0	12.7	0.5	14.4	10.5	4.6	14	99.4	65
387	9.7	54.2	1871	-1.0	12.7	0.3	14.2	11.2	3.1	14	99.4	65
388	9.5	54.6	1818	-1.0	12.7	0.0	14.3	10.3	3.3	14	99.4	65
389	9.6	54.3	1833	-1.0	12.7	-0.1	14.3	9.4	7.8	14	99.4	65
390	9.4	54.5	1778	-1.0	12.7	-0.3	14.2	9.2	5.3	14	99.4	65
391	8.9	55.5	1597	-1.0	12.7	-1.6	14.2	9.4	5.6	14	99.4	65
392	8.5	54.6	1431	-1.0	12.7	-2.7	14.2	8.4	5.5	14	99.4	65
393	8.6	54.9	1464	-1.0	12.7	-2.6	14.4	8.7	5.3	15	99.4	64
394	8.6	55.6	1462	-1.0	12.7	-2.5	14.3	8.8	5.3	15	99.4	64
395	8.9	55.2	1591	-1.0	12.7	-1.8	14.4	9.6	6.0	15	99.4	64
396	9.0	55.3	1670	-1.0	12.7	-1.2	14.4	9.0	4.9	15	99.4	64
397	9.1	55.0	1698	-1.0	12.7	-1.0	14.4	8.8	4.9	15	99.4	64
398	9.5	54.9	1826	-1.0	12.7	-0.1	14.4	9.8	6.1	15	99.4	64
399	9.9	54.5	1945	-1.0	12.7	0.7	14.5	9.4	4.7	15	99.4	64
400	9.8	54.1	1901	-1.0	10.9	0.5	14.3	10.1	4.3	15	99.4	64
401	9.3	53.9	1739	-1.0	10.2	-0.6	14.2	9.5	5.8	15	99.4	64
402	9.5	54.1	1831	-1.0	10.1	-0.2	14.4	8.9	5.0	15	99.4	64
403	9.9	54.3	1939	-1.0	10.1	0.8	14.4	10.3	3.7	15	99.4	64
404	9.7	54.8	1886	-1.0	10.1	0.3	14.3	10.2	3.0	15	99.4	64
405	11.5	55.2	2101	-1.0	10.1	1.7	14.5	10.8	2.5	15	99.4	66
406	9.1	54.4	1700	-1.0	10.1	-0.8	14.0	9.5	2.7	15	99.4	66
407	9.0	54.4	1633	-1.0	10.1	-1.4	14.2	9.4	2.4	15	99.4	66
408	8.3	54.6	1329	-1.0	10.1	-2.6	14.0	7.0	1.4	15	99.4	66
409	7.7	54.1	1094	-1.0	10.1	-3.0	13.8	6.4	1.8	15	99.4	66
410	7.8	53.4	1098	-1.0	10.1	-3.0	12.9	6.5	3.6	15	99.4	66
411	7.3	52.9	893	-1.0	10.1	-3.0	12.3	5.5	4.0	15	99.4	66
412			847	-1.0	10.1	-3.0	12.1	6.6	5.1	15	99.4	66
413	7.4	53.7	963	-1.0	10.1	-3.0	12.5	6.9	5.7	15	99.4	66
414	7.3	52.0	926	-1.0	10.1	-3.0	12.4	6.3	5.6	15	99.4	66
415	7.1	51.7	830	-1.0	12.2	-3.0	12.0	6.3	5.4	15	99.4	66
416	6.9	51.0	764	-1.0	13.2	-3.0	11.7	6.9	4.9	15	99.4	66
417	6.3	50.4	592	-1.0	13.2	-3.0	10.8	5.9	5.3	15	99.4	64
418	5.6	48.6	403	-1.0	13.2	-3.0	9.3	4.5	5.6	15	99.4	64
419	5.3	46.6	337	-1.0	13.2	-3.0	8.8	4.5	4.4	15	99.4	64
420	5.9	47.1	461	-1.0	13.2	-3.0	9.9	6.1	3.9	15	99.4	64
421	7.3	50.1	916	-1.0	13.2	-3.0	12.2	7.1	5.0	15	99.4	64
422	8.4	53.1	1364	-1.0	13.2	-2.0	13.9	9.9	4.6	15	99.4	64
423	9.7	54.5	1872	-1.0	13.2	0.2	14.6	9.4	4.2	15	99.4	65
424	9.5	54.1	1806	-1.0	13.3	-0.1	14.3	9.3	2.2	15	99.4	65
425	9.4	54.9	1783	-1.0	13.3	-0.4	14.4	9.0	1.1	15	99.4	65
426	9.6	54.6	1852	-1.0	13.3	0.0	14.4	8.9	1.3	15	99.4	65
427	9.7	54.5	1889	-1.0	13.3	0.4	14.4	9.2	3.0	15	99.4	65
428	9.7	54.2	1880	-1.0	12.1	0.4	14.4	9.7	2.2	15	99.4	65
429	9.4	54.2	1785	-1.0	9.9	-0.2	14.2	9.4	3.4	15	99.5	66
430	9.2	54.3	1725	-1.0	9.8	-0.8	14.3	8.0	5.8	15	99.5	67
431	9.7	54.5	1876	-1.0	9.8	0.1	14.5	9.3	5.7	15	99.5	67
432	11.8	54.2	2068	-1.0	9.8	1.5	14.5	11.1	5.3	15	99.5	67
433	12.3	54.2	2123	-1.0	9.8	1.9	14.7	11.5	4.3	15	99.5	67
434	10.8	54.4	2135	-1.0	9.8	2.6	14.9	10.1	4.6	15	99.5	67
435	10.2	53.9	2007	-1.0	9.8	1.2	14.2	10.1	3.7	15	99.4	65
436	9.8	54.3	1929	-1.0	9.8	0.5	14.3	9.7	4.6	15	99.4	64
437	10.0	54.1	1966	-1.0	9.8	0.8	14.3	9.4	3.3	15	99.4	64
438	9.8	53.8	1912	-1.0	9.8	0.6	14.3	8.9	2.9	15	99.4	64
439	9.6	54.6	1861	-1.0	9.8	0.3	14.2	8.8	1.6	15	99.4	64
440	8.8	54.2	1557	-1.0	9.1	-1.7	14.1	7.4	2.0	15	99.4	64

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
441	8.2	54.5	1288	-1.0	7.0	-2.9	14.0	6.6	2.4	15	99.4	64
442	8.3	54.2	1342	-1.0	7.0	-2.8	14.3	7.7	1.9	15	99.4	63
443	8.7	54.6	1524	-1.0	7.0	-2.1	14.4	8.5	1.7	15	99.4	63
444	8.7	53.9	1510	-1.0	7.0	-2.2	14.3	8.3	3.9	15	99.4	63
445	9.1	54.6	1677	-1.0	6.9	-1.2	14.5	8.7	2.9	15	99.4	63
446	9.5	54.6	1827	-1.0	7.0	-0.1	14.5	9.3	3.3	15	99.4	63
447	9.2	54.0	1731	-1.0	7.0	-0.6	14.2	9.2	2.4	15	99.4	64
448	9.5	53.7	1813	-1.0	7.0	-0.3	14.4	9.4	2.4	15	99.4	64
449	9.6	54.2	1850	-1.0	7.0	0.1	14.3	9.7	2.4	15	99.4	64
450	9.2	53.7	1728	-1.0	7.0	-0.8	14.2	9.8	3.4	15	99.4	64
451	8.8	53.9	1549	-1.0	7.0	-1.9	14.2	7.8	2.8	15	99.4	64
452	8.8	54.7	1543	-1.0	7.0	-1.9	14.3	8.6	3.0	15	99.4	64
453	8.8	55.0	1559	-1.0	7.0	-1.9	14.3	7.8	2.6	15	99.4	64
454	8.7	54.6	1527	-1.0	7.0	-2.0	14.3	8.0	2.1	15	99.4	65
455	8.5	54.6	1430	-1.0	7.0	-2.5	14.2	6.6	5.0	15	99.4	65
456			1912	-1.0	14.8	0.4	14.5	9.5	4.8	15	99.4	61
457			1938	-1.0	14.9	0.6	14.4	9.9	5.2	15	99.4	61
458			1895	-1.0	14.9	0.4	14.3	9.4	5.6	15	99.4	60
459			1908	-1.0	14.9	0.4	14.4	9.0	6.1	15	99.4	60
460			1849	-1.0	14.8	0.2	14.2	10.0	6.1	15	99.4	60
461			1828	-1.0	14.8	-0.2	14.4	10.4	6.0	15	99.4	60
462			1935	-1.0	14.8	0.7	14.4	9.2	5.7	15	99.4	60
463			1609	-1.0	14.8	-1.4	14.1	6.8	5.4	15	99.4	60
464			1660	-1.0	14.8	-1.3	14.4	8.5	6.0	15	99.4	60
465			1970	-1.0	14.7	0.9	14.5	9.8	6.6	15	99.4	59
466			1998	-1.0	14.8	1.1	14.4	9.3	5.5	15	99.4	59
467	10.3	54.4	2071	-1.0	12.8	1.5	14.4	9.7	5.2	15	99.4	59
468	10.0	54.1	1979	-1.0	11.5	1.0	14.2	9.9	4.8	15	99.4	59
469	9.9	54.4	1949	-1.0	11.4	0.8	14.3	9.0	4.9	15	99.4	59
470	9.5	54.5	1823	-1.0	11.4	-0.1	14.2	9.2	3.6	15	99.4	59
471	9.0	54.2	1669	-1.0	11.4	-1.0	14.2	8.1	3.6	15	99.4	60
472	9.3	54.4	1762	-1.0	11.4	-0.5	14.4	9.3	3.7	15	99.4	60
473	9.4	54.9	1775	-1.0	11.4	-0.4	14.3	8.5	4.8	15	99.4	60
474	9.0	54.0	1633	-1.0	11.4	-1.3	14.3	8.6	5.2	15	99.4	60
475	8.7	54.3	1496	-1.0	11.4	-2.2	14.2	8.3	3.3	15	99.4	60
476	8.6	53.9	1480	-1.0	11.4	-2.4	14.3	7.9	2.9	15	99.4	60
477	8.6	54.5	1492	-1.0	11.4	-2.2	14.3	7.3	2.7	16	99.4	60
478	8.3	54.8	1350	-1.0	11.4	-2.9	14.2	6.6	5.0	16	99.4	60
479	8.1	54.5	1253	-1.0	11.4	-3.0	14.2	7.1	4.6	16	99.4	60
480	7.7	53.8	1086	-1.0	11.4	-3.0	13.9	6.7	3.7	16	99.4	60
481	7.6	53.0	1048	-1.0	11.5	-3.0	12.7	6.3	3.8	16	99.4	60
482			826	-1.0	14.3	-3.0	12.0	6.0	4.4	16	99.4	60
483			786	-1.0	16.9	-3.0	11.8	6.4	5.7	16	99.4	60
484			952	-1.0	18.4	-3.0	12.3	7.0	6.1	16	99.4	60
485			1287	-1.0	21.1	-3.0	13.0	7.2	4.2	16	99.4	60
486			1224	-1.0	21.1	-3.0	13.1	6.5	5.5	16	99.4	60
487			1082	-1.0	21.1	-3.0	12.7	6.2	7.7	16	99.4	60
488			1242	-1.0	21.1	-3.0	13.2	7.7	7.4	16	99.4	60
489			1506	-1.0	21.1	-1.9	14.4	8.3	6.7	16	99.4	58
490			1782	-1.0	21.1	-0.7	14.5	8.6	5.1	16	99.4	58
491			1712	-1.0	21.1	-1.1	14.3	9.6	4.7	16	99.4	58
492			1569	-1.0	21.1	-2.0	14.2	8.0	6.2	16	99.4	58
493			1543	-1.0	21.1	-2.3	14.3	7.6	5.5	16	99.4	58
494			1612	-1.0	21.1	-1.7	14.4	8.6	4.7	16	99.4	58
495			1607	-1.0	21.1	-1.6	14.3	8.7	4.2	16	99.4	59
496			1670	-1.0	21.1	-1.1	14.4	9.3	3.2	16	99.4	59
497			1632	-1.0	21.0	-1.4	14.3	8.6	3.9	16	99.4	59
498			1665	-1.0	19.3	-1.1	14.3	9.3	6.4	16	99.4	59
499			1441	-1.0	19.1	-2.4	14.1	8.5	5.2	16	99.4	59
500			1176	-1.0	19.1	-3.0	14.1	7.4	3.8	16	99.4	59
501			1131	-1.0	19.1	-3.0	13.6	7.0	5.0	16	99.4	59
502			894	-1.0	19.1	-3.0	12.2	6.8	5.4	16	99.4	59
503			740	-1.0	19.1	-3.0	11.6	6.7	5.9	16	99.4	59
504			606	-1.0	19.1	-3.0	10.9	5.6	4.5	16	99.4	59
505			470	-1.0	19.0	-3.0	9.9	4.3	3.5	16	99.4	59
506			454	-1.0	19.0	-2.8	9.8	4.4	5.2	16	99.4	59
507			467	-1.0	19.0	-2.7	9.9	4.6	6.6	16	99.4	59
508			583	-1.0	17.3	-2.7	10.8	6.9	6.6	16	99.4	59
509			1036	-1.0	15.6	-2.7	12.5	6.4	5.9	16	99.4	59
510	8.1	53.4	1260	-1.0	13.3	-2.7	12.9	7.1	3.9	16	99.4	59
511	7.3	52.9	912	-1.0	11.4	-2.7	12.3	7.3	4.7	16	99.4	59
512	7.0	51.4	780	-1.0	11.3	-2.9	11.8	6.4	7.0	16	99.4	59
513	7.0	51.1	805	-1.0	8.5	-3.0	11.9	6.8	6.5	16	99.4	59
514	7.5	51.8	1007	-1.0	8.0	-3.0	12.6	7.4	4.8	16	99.4	59
515	7.3	51.5	927	-1.0	8.0	-3.0	12.4	8.0	5.9	16	99.4	59
516	7.0	51.4	791	-1.0	8.0	-3.0	11.9	6.1	5.7	16	99.4	59
517	6.4	50.8	598	-1.0	8.0	-3.0	10.8	5.5	7.0	16	99.4	59
518	5.8	49.1	451	-1.0	7.9	-2.9	9.8	4.2	6.8	16	99.4	58
519	5.5	48.2	385	-1.0	7.9	-2.7	9.2	4.4	4.7	16	99.4	58
520	5.7	47.7	411	-1.0	7.4	-2.7	9.5	4.9	3.6	16	99.4	58
521	6.1	47.9	527	-1.0	5.0	-2.7	10.4	5.8	6.1	16	99.4	58
522	6.8	49.8	737	-1.0	4.9	-2.7	11.6	6.5	5.4	16	99.4	58
523	7.2	51.0	883	-1.0	4.9	-2.7	12.3	6.2	4.6	16	99.4	58
524	7.6	51.3	1034	-1.0	4.9	-2.8	12.6	7.0	3.6	16	99.4	58
525	7.6	51.8	1028	-1.0	4.9	-3.0	12.6	6.4	3.9	16	99.4	60
526	7.1	52.4	851	-1.0	4.9	-3.0	12.1	6.4	3.6	16	99.4	60
527	6.7	51.1	704	-1.0	4.9	-3.0	11.4	6.1	5.0	16	99.4	60
528	6.9	50.4	776	-1.0	4.9	-3.0	11.8	6.7	4.3	16	99.4	60

Table E.01 Measurement data - Turbine ON

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 03/02/2016

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
529	8.0	52.1	1207	-1.0	4.9	-3.0	12.9	7.4	2.5	16	99.4	60
530	8.0	52.8	1203	-1.0	4.9	-2.7	13.6	8.9	2.4	16	99.4	60
531	8.5	54.1	1435	-1.0	4.9	-2.3	14.3	8.4	2.6	16	99.4	61
532	8.4	54.4	1371	-1.0	4.9	-2.7	14.3	7.6	2.7	16	99.4	61
533	8.2	54.1	1291	-1.0	4.9	-2.7	14.2	8.0	3.0	16	99.4	61
534	7.9	54.0	1160	-1.0	4.9	-2.7	14.2	7.3	3.9	16	99.4	61
535	8.4	53.9	1358	-1.0	4.9	-2.5	14.4	8.3	3.3	16	99.4	61
536	8.4	54.2	1375	-1.0	4.9	-2.8	14.3	7.7	4.2	16	99.4	60
537	8.1	54.2	1228	-1.0	4.9	-3.0	14.2	7.4	3.1	16	99.4	60
538	7.9	54.1	1166	-1.0	4.9	-2.9	14.2	7.2	2.2	16	99.4	60
539	7.9	53.5	1142	-1.0	4.9	-3.0	14.2	7.8	3.1	16	99.4	60
540	7.8	53.7	1099	-1.0	4.9	-2.9	14.1	7.3	2.9	16	99.4	60
541	7.8	53.5	1101	-1.0	4.9	-3.0	13.7	6.7	3.0	16	99.4	60
542	8.3	53.4	1352	-1.0	4.9	-2.3	14.2	7.3	2.7	16	99.4	60
543	9.0	54.2	1665	-1.0	4.9	-1.0	14.4	8.8	3.7	16	99.5	59
544	8.9	53.9	1603	-1.0	4.9	-1.5	14.3	8.9	2.4	16	99.5	59
545	9.1	54.2	1671	-1.0	4.9	-1.1	14.4	10.0	3.5	16	99.5	59
546	9.7	54.3	1888	-1.0	4.9	0.3	14.5	9.6	5.8	16	99.5	59
547	9.7	54.3	1876	-1.0	4.9	0.3	14.4	8.6	4.5	16	99.5	59
548	9.6	53.6	1840	-1.0	4.9	0.2	14.3	8.3	3.4	16	99.5	59
549	9.1	54.0	1696	-1.0	4.9	-0.7	14.2	8.3	3.0	16	99.5	59
550	8.8	54.0	1577	-1.0	4.9	-1.6	14.2	8.6	3.3	16	99.5	59
551	9.0	54.5	1637	-1.0	5.1	-1.3	14.4	9.1	1.7	16	99.5	59
552	8.7	54.4	1504	-1.0	7.9	-2.1	14.2	8.6	2.9	16	99.5	59
553	8.4	54.4	1392	-1.0	8.4	-2.8	14.2	7.3	3.2	16	99.5	59
554	8.2	54.2	1280	-1.0	8.4	-2.9	14.3	7.6	5.8	16	99.5	59
555	8.7	54.4	1501	-1.0	8.4	-2.3	14.4	8.6	6.1	16	99.5	58
556	8.8	54.5	1557	-1.0	8.4	-1.9	14.4	8.0	4.1	16	99.5	58
557	9.0	54.7	1663	-1.0	8.4	-1.1	14.4	7.7	4.0	16	99.5	58
558	8.7	54.2	1507	-1.0	8.4	-2.2	14.2	7.0	5.7	16	99.5	58
559	8.3	54.4	1320	-1.0	8.4	-2.9	14.1	7.4	4.6	16	99.5	58
560	8.1	54.4	1232	-1.0	8.4	-2.9	14.2	7.5	4.5	16	99.5	58
561	8.2	54.2	1274	-1.0	6.6	-2.9	14.3	6.5	3.1	16	99.5	59
562	8.8	54.6	1568	-1.0	3.9	-1.9	14.5	8.6	2.5	16	99.5	59
563	9.8	54.6	1928	-1.0	3.9	0.7	14.6	9.7	1.4	16	99.5	59
564	9.5	53.7	1807	-1.0	3.9	-0.2	14.3	9.2	1.6	16	99.5	59
565	9.9	53.9	1931	-1.0	3.9	0.6	14.4	10.5	1.7	16	99.5	59
566	9.4	54.6	1800	-1.0	3.9	-0.2	14.2	8.4	1.8	16	99.5	59
567	8.9	53.8	1600	-1.0	3.9	-1.5	14.2	8.0	3.2	16	99.5	59
568	9.2	54.0	1727	-1.0	3.9	-0.8	14.4	9.3	4.7	16	99.5	59
569	8.8	54.2	1542	-1.0	3.9	-1.8	14.2	8.0	4.2	16	99.5	59
570	9.3	54.6	1742	-1.0	3.9	-0.8	14.5	9.0	3.8	16	99.5	59
571			2056	-1.0	3.8	1.4	14.6	8.8	5.5	16	99.5	59
572	10.6	54.3	2021	-1.0	1.6	1.4	14.3	9.9	5.0	16	99.5	59
573	8.9	53.4	1608	-1.0	1.2	-1.4	14.0	8.9	5.9	16	99.5	59
574	9.2	54.4	1726	-1.0	1.2	-0.8	14.4	9.0	6.1	16	99.5	59
575	9.4	54.3	1782	-1.0	1.2	-0.3	14.3	9.8	6.1	16	99.5	59
576	9.4	54.5	1778	-1.0	1.2	-0.4	14.3	9.8	4.0	16	99.5	59
577	9.2	54.9	1711	-1.0	1.2	-0.8	14.3	8.2	4.2	16	99.5	59
578	9.1	54.3	1702	-1.0	1.2	-0.9	14.3	8.5	4.6	16	99.5	59
579	10.1	54.7	1988	-1.0	1.2	1.0	14.5	9.7	4.5	16	99.5	58
580	11.4	55.4	2049	-1.0	1.2	1.4	14.5	10.7	5.5	16	99.5	58
581	11.5	55.6	2089	-1.0	1.2	1.7	14.5	10.8	3.6	16	99.5	58
582	11.2	55.1	2079	-1.0	1.2	1.6	14.4	10.5	3.9	16	99.5	58
583	10.3	54.4	2008	-1.0	1.2	1.1	14.3	9.6	5.1	16	99.5	58
584	9.8	54.8	1909	-1.0	2.5	0.5	14.2	9.4	5.0	16	99.5	58
585	9.9	54.1	1930	-1.0	4.9	0.6	14.3	10.0	5.5	16	99.5	58
586	9.5	54.3	1820	-1.0	4.9	-0.1	14.2	9.4	3.5	16	99.5	58
587	9.5	54.3	1824	-1.0	4.9	-0.1	14.3	9.3	4.3	16	99.5	58
588	9.5	54.1	1827	-1.0	4.9	0.0	14.3	9.0	5.1	16	99.5	58
589	9.5	54.0	1817	-1.0	4.9	-0.1	14.3	10.0	4.8	16	99.5	58
590	9.4	54.4	1794	-1.0	4.9	-0.2	14.3	9.4	2.5	16	99.5	58
591	9.3	55.1	1736	-1.0	4.9	-0.7	14.3	7.9	2.8	16	99.5	59
592	9.2	54.8	1731	-1.0	4.9	-0.6	14.3	8.0	3.5	16	99.5	59
593	8.9	54.3	1590	-1.0	4.9	-1.6	14.3	8.4	5.0	16	99.5	59
594	9.3	54.3	1750	-1.0	4.9	-0.6	14.4	9.1	3.8	16	99.5	59
595	9.3	54.5	1757	-1.0	4.0	-0.5	14.3	8.5	2.8	16	99.5	59
596	9.0	54.3	1668	-1.0	2.0	-1.1	14.3	8.7	4.9	16	99.5	59
597	9.1	54.1	1692	-1.0	2.1	-1.0	14.3	8.8	3.5	15	99.5	59
598	9.3	54.4	1752	-1.0	2.1	-0.6	14.4	9.4	3.8	15	99.5	59
599	10.2	54.6	1998	-1.0	2.1	1.1	14.5	9.6	3.9	15	99.5	59
600	12.5	54.4	2103	-1.0	2.1	1.7	14.5	11.8	3.5	15	99.5	59
601	10.2	53.7	2001	-1.0	2.1	1.1	14.3	9.9	2.9	15	99.5	59
602	9.8	53.9	1907	-1.0	2.1	0.4	14.2	9.8	3.8	15	99.5	59
603	9.8	54.4	1914	-1.0	2.1	0.6	14.3	10.3	4.3	16	99.5	59
604	9.8	54.1	1899	-1.0	2.1	0.4	14.4	9.8	3.0	16	99.5	59
605	9.8	54.3	1908	-1.0	2.1	0.5	14.3	9.9	3.7	16	99.5	59
606	11.9	54.6	2056	-1.0	2.1	1.4	14.5	11.1	3.2	16	99.5	59
607	11.8	55.1	2140	-1.0	2.1	2.1	14.8	11.1	3.8	16	99.5	59
608			2103	-1.0	2.1	1.7	14.5	9.1	4.8	16	99.5	59
609	10.1	54.5	1992	-1.0	3.3	1.1	14.2	9.9	5.7	16	99.5	58
610	9.8	53.8	1902	-1.0	5.3	0.4	14.2	9.3	5.0	16	99.5	58
611	9.5	54.2	1807	-1.0	5.3	0.0	14.2	9.1	3.6	16	99.5	58
612	9.2	54.1	1726	-1.0	5.3	-0.7	14.3	8.9	2.7	16	99.5	58
613	9.3	54.5	1752	-1.0	5.3	-0.5	14.3	8.5	3.9	16	99.5	58
614	9.9	54.4	1935	-1.0	5.3	0.6	14.5	8.6	3.7	16	99.5	59
615	9.9	53.7	1943	-1.0	5.3	0.7	14.4	9.1	4.7	16	99.5	60
616	9.6	53.6	1834	-1.0	5.3	0.1	14.3	9.3	4.9	16	99.5	60

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
617	9.5	54.0	1802	-1.0	5.3	-0.1	14.3	9.1	3.0	16	99.5	60
618	8.8	54.0	1582	-1.0	5.3	-1.5	14.1	8.5	3.5	16	99.5	60
619	9.0	54.7	1663	-1.0	5.3	-1.3	14.4	9.2	3.6	16	99.5	60
620	10.0	54.7	1973	-1.0	5.3	0.8	14.6	9.5	3.5	16	99.5	60
621	11.3	54.9	2108	-1.0	5.3	1.8	14.6	10.6	3.1	16	99.5	59
622	10.9	54.1	2018	-1.0	5.3	1.3	14.3	10.2	2.9	16	99.5	59
623	11.5	54.2	2057	-1.0	5.3	1.4	14.3	10.8	3.9	16	99.5	59
624	10.5	54.3	2075	-1.0	5.3	1.5	14.5	9.8	4.4	16	99.5	59
625	11.7	54.5	2144	-1.0	5.3	2.5	14.9	11.0	3.3	16	99.5	59
626	11.0	55.2	2101	-1.0	5.1	1.9	14.6	10.3	2.8	16	99.5	59
627	9.5	54.2	1808	-1.0	2.6	-0.1	14.1	9.9	4.8	16	99.5	59
628	9.8	54.6	1911	-1.0	2.3	0.5	14.3	9.6	4.2	16	99.5	59
629	9.4	53.8	1793	-1.0	2.2	-0.2	14.2	8.8	4.1	16	99.5	59
630			1876	-1.0	78.9	0.3	14.4	9.3	4.8	16	99.5	59
631	9.0	54.7	1642	359.0	359.5	-1.1	14.2	8.1	5.4	16	99.5	59
632	9.4	54.3	1776	359.0	359.5	-0.2	14.4	7.8	4.5	16	99.5	59
633			1679	359.0	309.8	-0.8	14.3	6.8	3.0	16	99.5	59
634	9.6	54.1	1861	-1.0	1.6	0.1	14.5	8.9	4.3	16	99.5	59
635	10.4	54.7	2080	-1.0	1.8	1.5	14.5	9.8	3.0	16	99.5	59
636	10.5	54.1	2095	-1.0	1.8	1.6	14.5	9.8	3.9	16	99.5	59
637	10.8	54.1	2067	-1.0	1.8	1.5	14.4	10.1	2.7	16	99.5	59
638			2009	-1.0	1.8	1.2	14.2	9.3	3.0	16	99.5	59
639	9.7	54.0	1890	-1.0	1.8	0.3	14.2	8.9	3.0	16	99.5	59
640	9.8	54.1	1907	-1.0	1.8	0.5	14.3	9.0	4.0	16	99.5	59
641	10.0	54.3	1973	-1.0	1.9	0.8	14.3	9.6	2.9	16	99.5	59
642	9.8	54.1	1916	-1.0	1.9	0.6	14.3	8.8	2.7	16	99.5	59
643	9.6	54.6	1843	-1.0	3.9	0.1	14.3	8.8	3.6	16	99.5	59
644	9.8	54.0	1916	-1.0	5.3	0.5	14.3	9.3	4.5	16	99.5	59
645	10.0	53.7	1967	-1.0	5.3	0.8	14.4	9.5	7.1	16	99.5	58
646			2071	-1.0	5.3	1.5	14.5	9.5	5.3	16	99.5	58
647	10.5	54.3	2047	-1.0	5.4	1.5	14.3	9.8	3.4	16	99.5	58
648	11.3	53.9	2106	-1.0	8.2	2.1	14.7	10.6	3.8	16	99.5	58
649	10.4	54.1	2142	-1.0	8.8	4.0	15.1	9.7	4.6	16	99.5	58
650	10.2	53.9	2003	-1.0	8.8	1.7	14.3	10.5	7.4	16	99.5	58
651	9.4	54.2	1779	-1.0	8.8	-0.3	14.1	9.3	7.4	16	99.5	58
652	8.9	53.7	1620	-1.0	8.8	-1.4	14.1	8.8	6.7	16	99.5	58
653	8.5	54.2	1405	-1.0	8.8	-2.7	14.1	8.6	8.2	16	99.5	58
654	7.9	53.8	1160	-1.0	8.9	-3.0	13.9	7.9	7.2	16	99.5	58
655	7.6	52.9	1024	-1.0	8.9	-3.0	12.6	6.5	4.3	16	99.5	58
656	6.9	50.8	755	-1.0	8.8	-3.0	11.7	5.9	3.0	16	99.5	58
657	6.5	49.5	641	-1.0	8.8	-3.0	11.1	5.2	2.8	16	99.5	59
658	6.8	49.7	738	-1.0	8.8	-3.0	11.6	6.2	2.7	16	99.5	59
659	7.1	51.2	826	-1.0	8.8	-3.0	12.1	5.9	2.7	16	99.5	59
660	7.4	50.8	940	-1.0	8.8	-3.0	12.5	6.2	3.1	16	99.5	59
661	7.5	51.3	999	-1.0	7.8	-3.0	12.6	6.6	3.3	16	99.5	59
662	7.3	51.6	916	-1.0	5.4	-3.0	12.4	7.2	3.3	16	99.5	59
663	7.0	51.2	792	-1.0	5.3	-3.0	11.8	6.9	5.1	16	99.5	59
664	6.4	49.7	618	-1.0	5.3	-3.0	11.0	5.8	5.1	16	99.5	59
665	6.5	49.7	625	-1.0	5.4	-3.0	11.1	6.3	6.2	16	99.5	59
666	6.6	49.4	654	-1.0	5.4	-3.0	11.2	6.5	5.1	16	99.5	59
667	6.6	49.5	675	-1.0	5.4	-3.0	11.4	6.5	3.1	16	99.5	59
668	8.3	51.5	1322	-1.0	5.5	-1.7	13.7	9.1	4.0	16	99.5	59
669	10.8	54.7	2022	-1.0	5.5	1.4	14.7	10.1	4.2	16	99.5	59
670	11.0	54.9	2118	-1.0	5.5	2.1	14.6	10.3	3.7	16	99.5	59
671			2094	-1.0	5.5	2.2	14.5	8.8	3.3	16	99.5	59
672	10.9	54.4	2135	-1.0	5.4	2.7	14.8	10.2	2.4	16	99.5	59
673	11.2	54.5	2137	-1.0	5.4	3.9	15.1	10.5	1.3	16	99.5	59
674	11.7	54.7	2141	-1.0	5.5	3.9	14.9	11.0	4.0	16	99.5	59
675			2145	-1.0	5.5	4.5	15.0	11.4	4.6	16	99.5	58
676			2143	-1.0	5.5	4.3	14.8	11.9	4.9	16	99.5	58
677			2145	-1.0	5.5	4.5	14.9	11.5	6.2	16	99.5	58
678			2131	-1.0	5.5	3.5	14.7	11.1	5.8	16	99.5	58
679			2131	-1.0	5.5	2.7	14.8	11.3	6.0	16	99.5	58
680			2041	-1.0	5.5	1.4	14.4	10.5	4.9	16	99.5	58
681			1726	-1.0	5.5	-0.7	14.1	8.0	3.3	16	99.5	57
682			1934	-1.0	5.5	0.5	14.5	9.4	2.6	16	99.5	57
683			2141	-1.0	5.5	3.6	15.1	11.0	1.5	16	99.5	57
684			2104	-1.0	5.5	3.1	14.7	9.5	4.0	16	99.5	57
685			1936	-1.0	5.5	0.7	14.2	9.5	4.5	16	99.5	57
686			1737	-1.0	6.1	-0.5	14.1	9.0	4.0	16	99.5	57
687	8.7	54.1	1522	-1.0	8.7	-2.0	14.1	8.0	3.3	16	99.5	58
688	8.8	54.4	1569	-1.0	8.8	-1.8	14.4	7.8	5.2	16	99.5	58
689	9.2	54.7	1708	-1.0	8.8	-0.8	14.4	8.2	4.7	16	99.5	58
690	9.3	54.1	1758	-1.0	8.8	-0.4	14.4	8.3	3.2	16	99.5	58
691	9.2	54.1	1730	-1.0	8.8	-0.5	14.3	9.3	3.6	16	99.5	58
692	9.1	54.6	1676	-1.0	8.8	-1.2	14.4	8.9	4.1	16	99.5	58
693	9.3	54.9	1762	-1.0	8.8	-0.3	14.3	8.8	4.6	16	99.5	58
694	9.5	54.2	1829	-1.0	8.8	-0.2	14.5	9.1	4.2	16	99.5	58
695	10.6	54.0	2080	-1.0	8.8	1.6	14.5	10.0	5.2	16	99.5	58
696	10.7	54.0	2047	-1.0	8.8	1.4	14.3	10.1	5.5	16	99.5	58
697	10.1	54.5	1995	-1.0	8.8	1.0	14.3	9.4	5.6	16	99.5	58
698	11.2	54.2	2071	-1.0	8.8	1.5	14.5	10.5	4.7	16	99.5	58
699	10.9	54.5	2072	-1.0	8.8	1.5	14.3	10.2	3.3	16	99.5	58
700	10.9	54.8	2080	-1.0	8.8	1.6	14.5	10.2	2.9	16	99.5	58
701	11.7	54.5	2134	-1.0	8.8	2.1	14.8	10.9	5.5	16	99.5	58
702	12.0	54.7	2031	-1.0	8.8	1.4	14.3	11.3	5.3	16	99.5	58
703	11.2	54.1	2099	-1.0	8.8	1.9	14.6	10.5	5.8	16	99.5	58
704	11.9	54.4	2141	-1.0	8.8	3.6	15.0	11.1	3.3	16	99.5	58

Table E.01 Measurement data - Turbine ON

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 03/02/2016

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
705	11.3	53.8	2137	-1.0	8.8	2.6	14.8	10.6	2.8	16	99.5	58
706	11.5	54.5	2142	-1.0	8.8	3.7	15.1	10.8	5.8	16	99.5	58
707	11.6	53.9	2129	-1.0	8.8	3.4	14.8	10.9	4.7	16	99.5	58
708	12.1	54.5	2121	-1.0	8.8	2.0	14.7	11.3	3.2	16	99.5	58
709	11.3	53.9	2127	-1.0	8.8	2.4	14.8	10.6	4.6	16	99.5	58
710	13.0	54.0	2141	-1.0	8.8	6.1	15.4	12.2	4.7	16	99.5	58
711	11.9	53.4	2112	-1.0	8.8	4.7	14.6	11.1	4.4	16	99.5	58
712	11.4	54.2	2120	-1.0	8.8	3.6	14.9	10.7	3.8	16	99.5	58
713	14.4	55.2	2143	-1.0	8.8	7.0	15.5	13.5	2.9	16	99.5	58
714	11.2	53.9	2124	-1.0	8.8	6.3	14.7	10.5	4.3	16	99.5	58
715	12.2	54.4	2142	-1.0	8.8	5.8	14.9	11.4	7.1	16	99.5	58
716	12.7	55.0	2125	-1.0	8.8	6.4	14.9	11.9	6.2	16	99.5	58
717	13.1	54.0	2124	-1.0	8.8	5.1	14.8	12.2	4.7	16	99.5	57
718	12.1	54.2	2142	-1.0	8.8	5.3	14.9	11.4	6.4	16	99.5	57
719	12.7	54.5	2135	-1.0	8.8	4.7	14.8	12.0	6.0	16	99.5	57
720	12.1	53.7	2123	-1.0	8.8	3.2	14.7	11.4	5.3	16	99.5	57
721	12.1	54.0	2135	-1.0	8.8	2.3	14.8	11.3	4.5	16	99.5	57
722	10.8	54.4	2092	-1.0	8.8	1.7	14.5	10.1	4.7	16	99.5	57
723	9.3	53.7	1764	-1.0	8.8	-0.3	14.1	8.8	6.3	16	99.5	58
724	9.1	54.2	1693	-1.0	8.8	-0.9	14.2	8.7	4.7	16	99.5	58
725	8.9	54.1	1593	-1.0	8.8	-1.5	14.2	8.9	3.2	16	99.5	58
726	8.5	54.2	1431	-1.0	8.8	-2.6	14.2	8.4	5.4	16	99.5	58
727	8.6	54.1	1471	-1.0	8.8	-2.5	14.3	8.4	6.8	16	99.5	58
728	9.1	54.5	1681	-1.0	8.8	-1.1	14.5	10.2	6.6	16	99.5	57
729	8.9	54.2	1593	-1.0	8.8	-1.6	14.3	9.1	4.9	16	99.5	57
730	9.9	54.9	1947	-1.0	8.8	0.7	14.6	10.4	6.0	16	99.5	57
731	11.4	54.4	2011	-1.0	8.8	1.3	14.4	10.7	5.4	16	99.5	57
732	11.6	54.4	2081	-1.0	8.8	1.7	14.5	10.9	4.5	16	99.5	57
733	11.9	54.1	2096	-1.0	8.8	1.7	14.5	11.2	4.6	16	99.5	57
734	10.9	54.2	2117	-1.0	8.8	1.7	14.6	10.2	4.8	16	99.5	57
735	11.1	54.3	2070	-1.0	8.8	1.5	14.4	10.5	5.2	15	99.5	57
736	9.6	54.0	1861	-1.0	8.8	0.3	14.1	9.8	3.8	15	99.5	57
737	9.4	53.6	1797	-1.0	8.8	-0.3	14.3	9.5	2.8	15	99.5	57
738	11.5	55.1	2082	-1.0	8.8	2.3	14.9	10.8	5.2	15	99.5	57
739	11.7	54.4	2146	-1.0	8.8	5.3	15.2	11.0	7.1	15	99.5	57
740	12.2	54.9	2131	-1.0	8.8	4.6	14.7	11.5	6.3	15	99.5	57
741	11.2	53.7	2121	-1.0	8.8	3.3	14.7	10.5	3.8	15	99.5	57
742	11.4	54.3	2141	-1.0	8.8	3.2	14.9	10.7	3.5	15	99.5	57
743	11.3	53.9	2124	-1.0	8.8	1.9	14.7	10.6	4.4	15	99.5	57
744	12.5	54.5	2146	-1.0	8.8	2.4	14.8	11.8	4.9	15	99.5	57
745	11.5	54.3	2101	-1.0	8.8	1.8	14.6	10.8	6.5	15	99.5	57
746	9.1	53.8	1676	-1.0	8.8	-1.0	14.0	9.1	3.9	15	99.5	57
747	9.2	54.3	1735	-1.0	8.8	-0.8	14.3	8.7	2.2	15	99.5	57
748	9.8	54.4	1928	-1.0	8.8	0.5	14.5	9.0	5.4	15	99.5	57
749	10.9	54.7	2118	-1.0	6.6	2.1	14.8	10.3	5.2	15	99.5	57
750	10.4	54.6	2102	-1.0	5.7	1.8	14.6	9.7	4.3	15	99.5	57
751	9.5	53.5	1811	-1.0	5.7	-0.1	14.1	8.7	5.2	15	99.5	57
752	9.1	54.2	1689	-1.0	5.7	-0.9	14.2	8.3	4.1	15	99.5	57
753	9.3	54.5	1765	-1.0	5.1	-0.3	14.3	8.9	3.6	15	99.5	58
754	9.5	54.3	1808	-1.0	2.7	-0.1	14.4	9.7	3.6	15	99.5	58
755	8.8	54.1	1551	-1.0	2.7	-1.5	14.1	8.6	3.5	15	99.5	58
756	8.4	54.4	1392	-1.0	2.6	-2.5	14.3	6.7	4.1	15	99.5	58
757			2120	359.0	360.2	2.1	14.8	9.6	4.8	16	99.5	56
758	11.0	54.2	2127	359.0	360.1	2.3	14.7	10.3	3.9	16	99.5	56
759	9.2	53.6	1706	359.0	360.2	-0.6	14.0	8.6	4.2	16	99.5	56
760	9.7	54.2	1877	359.0	360.1	0.1	14.5	9.0	4.4	16	99.5	56
761	10.5	54.8	2136	359.0	360.1	2.7	14.9	9.8	6.0	16	99.5	56
762	11.7	54.6	2143	359.0	360.1	3.5	14.9	11.0	4.8	16	99.5	56
763	11.4	54.9	2140	359.0	360.1	3.2	14.8	10.7	3.9	16	99.5	56
764	10.4	54.0	2135	359.0	360.1	2.6	14.9	9.7	3.9	16	99.5	56
765	11.4	54.5	2138	359.0	360.1	3.9	14.9	10.7	5.5	16	99.5	56
766	11.9	54.8	2125	359.0	360.1	2.7	14.7	11.2	4.1	16	99.5	56
767	10.6	54.3	2042	359.0	360.1	1.4	14.3	9.9	3.6	16	99.5	56
768	9.8	54.2	1921	359.0	360.1	0.7	14.2	10.5	5.4	16	99.5	56
769	8.9	53.6	1613	359.0	360.1	-1.4	14.1	8.6	5.0	16	99.5	57
770	8.8	53.9	1572	359.0	360.1	-1.7	14.2	7.9	4.5	16	99.5	57
771	8.6	53.6	1463	359.0	360.1	-2.4	14.2	7.3	3.5	16	99.5	57
772	8.3	53.9	1327	359.0	360.1	-2.9	14.2	7.6	3.7	16	99.5	57
773	8.5	54.1	1440	359.0	360.1	-2.5	14.4	8.0	4.2	16	99.5	57
774	9.1	54.6	1673	359.0	360.1	-1.0	14.5	8.2	4.7	16	99.5	57
775	8.7	53.8	1539	359.0	360.1	-1.9	14.2	7.9	4.9	16	99.5	56
776	8.6	53.9	1467	359.0	360.1	-2.5	14.3	8.9	4.0	16	99.5	56
777	9.0	54.1	1637	359.0	360.1	-1.3	14.5	8.4	2.9	16	99.5	56
778	9.1	54.2	1684	359.0	360.1	-1.2	14.4	9.7	5.3	16	99.5	56
779	10.0	54.8	1970	359.0	360.1	0.9	14.6	9.2	5.5	16	99.5	56
780			2069	359.0	360.1	1.7	14.5	9.0	4.5	16	99.5	57
781	12.3	54.6	2141	359.0	360.1	4.6	15.2	11.5	7.3	16	99.5	57
782	12.0	54.1	2135	359.0	360.1	5.5	15.0	11.3	7.0	16	99.5	57
783	12.6	53.8	2134	359.0	360.1	4.4	14.7	11.8	5.7	16	99.5	57
784			2142	359.0	157.1	4.1	14.9	11.7	6.6	16	99.5	57
785	11.5	54.2	2150	-1.0	3.0	5.0	15.0	10.8	5.5	16	99.5	57
786	12.3	54.2	2143	-1.0	3.1	5.5	15.0	11.5	6.6	16	99.5	57
787	12.4	53.8	2116	-1.0	3.1	3.8	14.6	11.6	7.4	16	99.5	57
788	10.8	54.3	2031	-1.0	3.1	1.4	14.3	10.1	8.2	16	99.5	57
789	9.5	53.5	1830	-1.0	3.1	0.0	14.1	10.0	7.5	16	99.5	57
790	9.3	53.7	1760	-1.0	3.1	-0.4	14.2	9.6	6.8	16	99.5	57
791	8.6	54.1	1473	-1.0	3.1	-2.2	14.1	8.4	5.2	16	99.5	57
792	8.5	54.1	1428	-1.0	3.1	-2.7	14.2	7.5	3.6	16	99.5	56

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
793	8.8	54.3	1574	-1.0	3.1	-1.6	14.4	7.4	3.6	16	99.5	56
794	8.9	54.4	1618	-1.0	3.3	-1.5	14.4	8.9	4.8	16	99.5	56
795	8.7	54.0	1532	-1.0	6.1	-1.9	14.2	8.8	3.8	16	99.5	56
796	8.2	54.1	1266	-1.0	6.5	-2.9	14.1	8.4	4.7	16	99.5	56
797	9.0	54.6	1653	-1.0	6.5	-1.4	14.6	10.1	5.8	16	99.5	56
798	9.7	54.6	1877	-1.0	6.5	0.3	14.5	8.7	4.9	16	99.5	56
799	9.6	53.9	1853	-1.0	6.5	0.1	14.4	10.2	3.5	16	99.5	56
800	9.4	54.0	1799	-1.0	6.5	-0.3	14.3	9.4	5.5	16	99.5	56
801	9.3	54.0	1739	-1.0	6.5	-0.7	14.3	8.9	6.3	16	99.5	56
802	9.1	54.1	1699	-1.0	6.5	-0.9	14.3	8.2	5.1	16	99.5	56
803	8.9	53.6	1594	-1.0	6.5	-1.6	14.2	8.1	2.9	16	99.5	56
804	8.5	54.0	1419	-1.0	6.5	-2.7	14.2	7.6	5.1	16	99.5	56
805	9.0	54.9	1635	-1.0	6.5	-1.5	14.5	8.8	4.2	16	99.5	56
806	9.5	54.3	1818	-1.0	6.5	-0.1	14.5	9.1	3.6	16	99.5	56
807	9.3	53.8	1758	-1.0	6.5	-0.6	14.3	8.3	3.3	16	99.5	56
808	9.3	54.1	1765	-1.0	7.1	-0.3	14.3	8.0	4.6	16	99.5	56
809	8.9	53.9	1592	-1.0	10.9	-1.5	14.2	7.6	5.4	16	99.5	56
810	8.1	54.2	1224	-1.0	11.5	-2.8	14.0	8.3	6.7	16	99.5	56
811	7.7	53.4	1093	-1.0	11.5	-3.0	13.7	6.7	4.8	16	99.5	55
812	7.1	51.5	851	-1.0	11.5	-3.0	12.0	6.4	5.0	16	99.5	55
813	6.2	48.9	561	-1.0	11.5	-3.0	10.6	5.2	5.0	16	99.5	55
814	6.0	47.5	481	-1.0	12.0	-3.0	10.1	5.0	5.2	16	99.5	55
815	6.5	50.3	633	-1.0	14.0	-3.0	11.1	5.2	6.0	16	99.5	55
816			1096	-1.0	14.1	-3.0	12.6	8.0	4.3	16	99.5	56
817			1283	-1.0	14.1	-3.0	12.9	8.6	2.5	16	99.5	56
818			1220	-1.0	14.1	-3.0	12.8	7.1	2.9	16	99.5	56
819			1201	-1.0	14.1	-3.0	12.8	7.0	3.3	16	99.5	56
820			1026	-1.0	14.1	-3.0	12.6	6.7	3.0	16	99.5	56
821			965	-1.0	14.1	-3.0	12.5	7.4	4.4	16	99.5	56
822			1127	-1.0	14.1	-3.0	12.7	7.8	4.4	16	99.5	56
823			1250	-1.0	14.1	-3.0	12.9	8.4	5.0	16	99.5	57
824			1062	-1.0	14.1	-3.0	12.7	7.4	5.8	16	99.5	57
825			964	-1.0	14.1	-3.0	12.5	6.3	4.6	16	99.5	57
826			1020	-1.0	14.1	-3.0	12.6	7.1	4.2	16	99.5	57
827			932	-1.0	14.1	-3.0	12.4	7.4	4.5	16	99.5	57
828			902	-1.0	14.1	-2.7	12.3	7.0	4.4	16	99.5	57
829			1183	-1.0	14.1	-2.6	13.5	9.6	4.4	16	99.5	58
830			1389	-1.0	14.1	-2.5	14.3	8.1	3.2	16	99.5	58
831			1144	-1.0	14.1	-2.7	14.0	6.6	5.9	16	99.5	58
832			1161	-1.0	14.1	-2.5	13.6	7.2	6.7	16	99.5	58
833			2023	-1.0	14.1	1.9	14.9	10.2	8.1	16	99.5	58
834			2097	-1.0	14.1	2.0	14.6	11.1	8.7	16	99.5	57
835			1978	-1.0	14.1	0.9	14.2	11.3	6.3	16	99.5	56
836			2026	-1.0	14.1	1.3	14.3	9.8	5.7	16	99.5	56
837			1968	-1.0	14.3	0.9	14.3	10.0	4.9	16	99.5	56
838			2127	-1.0	17.2	3.4	15.0	11.2	4.9	16	99.5	56
839			2134	-1.0	17.5	4.6	15.0	11.2	6.5	16	99.5	56
840			2134	-1.0	17.5	3.4	14.7	10.3	6.6	16	99.5	56
841			2132	-1.0	17.5	3.2	14.8	10.8	6.6	16	99.5	55
842			2018	-1.0	17.5	1.3	14.3	9.6	5.0	16	99.5	55
843			1921	-1.0	17.5	0.5	14.3	10.1	4.1	16	99.5	55
844			1889	-1.0	17.5	0.3	14.3	9.5	3.6	16	99.5	55
845			1989	-1.0	17.5	1.0	14.4	10.5	3.7	16	99.5	55
846			2043	-1.0	17.5	1.3	14.5	10.6	3.9	16	99.5	56
847			2137	-1.0	17.5	2.0	14.8	10.9	5.0	16	99.5	57
848			2141	-1.0	17.5	2.7	14.9	11.0	3.5	16	99.5	57
849			2141	-1.0	17.5	2.1	14.8	11.2	6.7	16	99.5	57
850			1997	-1.0	16.6	1.2	14.3	9.0	4.8	16	99.5	57
851			2028	-1.0	14.6	1.2	14.4	10.7	7.0	16	99.5	57
852			2120	-1.0	14.6	2.0	14.7	10.9	5.2	16	99.5	56
853			2140	-1.0	14.6	2.9	14.9	10.5	4.4	16	99.5	55
854			2123	-1.0	14.6	1.8	14.6	10.5	4.9	16	99.5	55
855			1816	-1.0	14.6	0.0	14.1	8.9	4.7	16	99.5	55
856			1872	-1.0	14.6	0.3	14.3	8.5	4.0	16	99.5	55
857			1757	-1.0	14.6	-0.5	14.2	8.0	4.2	16	99.5	55
858			1590	-1.0	14.6	-1.7	14.2	8.9	3.5	16	99.5	55
859			2133	-1.0	14.6	2.4	15.0	11.2	4.5	16	99.5	55
860			2138	-1.0	14.6	4.8	15.2	10.8	5.8	16	99.5	55
861			2143	-1.0	14.6	4.9	14.8	11.4	6.2	16	99.5	55
862			2130	-1.0	14.6	4.1	14.8	10.7	4.4	16	99.5	55
863			2040	-1.0	14.6	1.3	14.3	8.9	7.0	16	99.5	55
864			2070	-1.0	14.6	1.5	14.4	10.8	6.1	16	99.5	55
865			2056	-1.0	14.5	1.5	14.3	7.6	6.0	16	99.5	55
866			2076	-1.0	14.5	1.5	14.4	10.4	5.2	16	99.5	55
867			2103	-1.0	14.5	1.7	14.5	9.6	3.9	16	99.5	55
868			1992	-1.0	14.4	1.0	14.2	10.2	5.9	16	99.5	55
869			2058	-1.0	14.5	1.5	14.3	8.6	7.3	16	99.5	55
870			1963	-1.0	14.4	0.9	14.3	8.8	7.2	16	99.5	55
871			2076	-1.0	14.4	1.6	14.5	11.5	4.2	16	99.5	55
872			2130	-1.0	14.5	2.1	14.8	11.5	5.1	16	99.5	55
873			2146	-1.0	14.5	4.4	15.2	9.8	4.8	16	99.5	55
874			2123	-1.0	14.4	3.0	14.7	9.5	6.0	16	99.5	55
875			2132	-1.0	14.4	4.2	15.0	11.8	5.0	16	99.5	55
876			2132	-1.0	14.4	3.4	14.8	9.9	6.0	16	99.5	56
877			2152	-1.0	14.5	4.7	15.1	11.5	5.5	16	99.5	56
878			2144	-1.0	14.5	6.9	15.3	12.8	5.5	16	99.5	56
879			2146	-1.0	14.5	8.2	15.1	13.3	5.3	16	99.5	56
880			2136	-1.0	14.5	7.8	14.8	13.3	8.0	16	99.5	56

Table E.01 Measurement data - Turbine ON

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 03/02/2016

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
881			2141	-1.0	14.4	7.6	14.8	13.3	6.8	16	99.5	56
882			2115	-1.0	14.5	6.5	14.7	13.1	4.0	16	99.5	56
883			2137	-1.0	14.5	6.2	14.8	12.6	7.4	16	99.5	56
884			2141	-1.0	14.5	6.4	15.0	12.7	5.8	16	99.5	56
885			2136	-1.0	14.5	6.0	14.8	11.6	5.0	16	99.5	56
886			2126	-1.0	14.5	4.6	14.7	11.5	7.1	16	99.5	56
887			2141	-1.0	14.5	4.7	14.9	12.0	5.6	16	99.5	56
888			2142	-1.0	14.5	4.6	14.9	11.6	4.7	16	99.5	57
889			2120	-1.0	14.5	3.7	14.7	11.3	4.9	16	99.5	57
890			2139	-1.0	14.5	3.5	14.9	11.3	5.2	16	99.5	57
891			2140	-1.0	14.5	5.4	15.2	11.3	4.6	16	99.5	57
892			2134	-1.0	14.5	5.7	14.9	11.4	5.2	16	99.5	57
893			2136	-1.0	14.5	4.8	14.8	11.3	4.5	16	99.5	57
894			2131	-1.0	14.4	3.9	14.7	9.8	5.1	16	99.5	57
895	11.2	53.8	2116	-1.0	12.9	2.5	14.7	10.5	4.2	16	99.5	56
896	12.4	54.4	2141	-1.0	11.8	2.9	14.9	11.7	5.1	16	99.5	56
897	11.3	54.3	2145	-1.0	11.6	3.3	15.0	10.6	6.1	16	99.5	56
898	10.4	53.9	2127	-1.0	11.7	3.1	14.8	9.8	4.3	16	99.5	56
899	11.2	54.1	2027	-1.0	11.7	1.4	14.3	10.5	3.1	16	99.5	56
900	9.4	54.1	1781	-1.0	11.6	-0.2	14.1	8.7	4.0	16	99.5	57
901	9.4	54.1	1779	-1.0	11.6	-0.3	14.2	9.6	6.0	16	99.5	57
902	10.0	54.7	1982	-1.0	11.6	0.8	14.5	10.3	6.1	16	99.5	57
903	11.1	54.3	2105	-1.0	11.7	1.8	14.6	10.4	6.7	16	99.5	57
904	12.1	54.3	2142	-1.0	11.7	4.1	15.1	11.3	7.3	16	99.5	57
905	11.4	54.2	2114	-1.0	11.7	3.9	14.8	10.7	6.2	16	99.5	57
906	11.0	54.2	2131	-1.0	11.7	2.2	14.7	10.3	5.8	16	99.5	57
907	9.9	54.8	1946	-1.0	11.7	0.8	14.2	10.3	4.7	16	99.5	56
908	9.4	54.3	1785	-1.0	11.6	-0.3	14.2	9.0	5.5	16	99.5	56
909	8.6	54.0	1474	-1.0	11.5	-2.3	14.1	8.5	6.2	16	99.5	56
910	8.8	54.2	1579	-1.0	11.6	-1.9	14.4	8.2	7.1	16	99.5	56
911	10.1	55.0	1987	-1.0	11.6	0.8	14.6	9.9	4.7	16	99.5	56
912	11.1	54.5	2131	-1.0	11.6	2.4	14.9	10.4	5.3	16	99.5	56
913	11.6	54.6	2143	-1.0	11.7	3.6	15.0	10.9	3.2	16	99.5	56
914	12.0	54.2	2142	-1.0	11.7	4.7	15.1	11.2	4.1	16	99.5	56
915	11.8	53.6	2121	-1.0	11.7	4.1	14.7	11.1	3.4	16	99.5	56
916	12.0	54.1	2138	-1.0	11.7	3.5	14.8	11.3	5.4	16	99.5	56
917	11.7	54.3	2147	-1.0	11.7	3.7	14.9	10.9	7.1	16	99.5	56
918	11.2	54.1	2137	-1.0	11.7	4.0	14.9	10.5	5.2	16	99.5	56
919	11.5	53.6	2135	-1.0	11.7	2.7	14.7	10.8	6.7	16	99.5	56
920	11.7	54.1	2140	-1.0	11.7	2.1	14.8	11.0	4.8	16	99.5	56
921	11.7	54.2	2131	-1.0	10.5	2.0	14.8	11.0	5.0	16	99.5	56
922	11.0	54.0	2097	-1.0	8.9	1.7	14.5	10.3	4.4	16	99.5	56
923	10.1	53.5	1993	-1.0	8.9	1.1	14.2	10.3	3.1	16	99.5	56
924	9.7	53.8	1881	-1.0	8.9	0.3	14.2	10.1	2.6	16	99.5	56
925	9.5	54.0	1833	-1.0	8.9	-0.1	14.3	9.0	3.0	16	99.5	56
926	9.3	54.4	1750	-1.0	7.6	-0.5	14.2	8.4	3.9	16	99.5	56
927	9.7	54.0	1890	-1.0	5.5	0.2	14.5	9.7	3.4	16	99.5	56
928	9.8	54.3	1899	-1.0	5.5	0.6	14.3	9.1	3.9	16	99.5	56
929	9.6	53.3	1838	-1.0	5.5	0.1	14.3	8.7	6.6	16	99.5	56
930	9.9	54.2	1961	-1.0	5.5	0.9	14.4	10.9	5.7	16	99.5	56
931	10.1	54.0	1991	-1.0	5.6	1.0	14.4	10.2	6.7	16	99.5	55
932	9.7	53.6	1892	-1.0	5.6	0.4	14.2	10.1	5.1	16	99.5	55
933	9.6	53.6	1843	-1.0	5.6	0.2	14.3	9.9	4.6	16	99.5	55
934	9.1	53.9	1677	-1.0	5.6	-0.9	14.2	9.4	5.9	16	99.5	55
935	9.1	54.3	1696	-1.0	5.6	-1.0	14.3	8.8	4.7	16	99.5	55
936	9.0	54.2	1646	-1.0	5.6	-1.1	14.3	8.0	7.0	16	99.5	55
937	8.6	54.3	1466	-1.0	5.6	-2.4	14.2	7.5	4.8	16	99.5	55
938	8.8	54.7	1558	-1.0	8.4	-1.9	14.4	8.7	5.8	16	99.5	55
939	8.8	54.4	1582	-1.0	9.3	-1.7	14.4	8.7	4.5	16	99.5	55
940	9.1	54.1	1701	-1.0	9.3	-0.9	14.4	8.4	3.2	16	99.5	55
941	9.1	53.8	1690	-1.0	9.3	-0.8	14.3	8.6	2.9	16	99.5	55
942	9.0	54.1	1654	-1.0	9.3	-1.2	14.3	8.3	1.7	16	99.5	55
943	9.7	55.0	1874	-1.0	9.3	0.2	14.5	8.0	2.4	16	99.5	55
944	9.3	54.6	1758	-1.0	9.3	-0.4	14.2	8.5	3.7	16	99.5	55
945	9.5	54.2	1830	-1.0	10.4	-0.2	14.4	9.6	6.0	16	99.5	55
946	11.7	54.6	2062	-1.0	12.6	1.5	14.5	10.9	6.7	16	99.5	55
947			2041	-1.0	12.6	1.4	14.3	8.8	6.1	16	99.5	55
948	10.0	54.0	1973	-1.0	12.6	0.8	14.3	10.2	4.3	16	99.5	55
949	10.0	54.0	1971	-1.0	12.6	1.1	14.3	10.7	3.7	16	99.5	55
950	10.0	53.8	1971	-1.0	12.6	0.9	14.3	11.7	5.9	16	99.5	55
951	9.7	54.2	1871	-1.0	12.6	0.3	14.2	9.9	7.5	16	99.5	55
952	9.3	53.8	1756	-1.0	12.6	-0.4	14.2	10.7	7.4	16	99.5	55
953	9.2	54.1	1722	-1.0	12.6	-0.7	14.3	10.0	3.4	16	99.5	55
954	9.5	54.0	1815	-1.0	12.6	0.0	14.4	9.9	6.3	16	99.5	55
955	9.2	54.0	1734	-1.0	12.6	-0.7	14.3	9.7	5.3	16	99.5	55
956	9.5	54.4	1818	-1.0	12.6	-0.2	14.4	9.5	4.2	16	99.5	55
957	9.5	54.2	1810	-1.0	12.6	0.0	14.3	10.2	2.1	16	99.5	55
958	8.8	54.0	1576	-1.0	12.6	-1.5	14.1	9.2	3.8	16	99.5	55
959	7.9	53.9	1172	-1.0	12.6	-3.0	13.9	7.3	3.6	16	99.5	55
960	7.7	53.6	1061	-1.0	12.6	-3.0	13.8	6.9	4.3	16	99.5	56
961	7.6	52.8	1045	-1.0	12.1	-3.0	12.7	6.8	4.5	16	99.5	57
962	7.1	50.9	848	-1.0	9.4	-3.0	12.1	6.5	7.5	16	99.5	57
963	7.1	50.9	829	-1.0	9.3	-3.0	12.0	6.1	7.5	16	99.5	57
964	7.2	50.7	857	-1.0	9.4	-3.0	12.2	6.2	6.5	16	99.5	57
965	7.5	51.6	990	-1.0	9.4	-3.0	12.6	7.3	5.5	16	99.5	57
966	7.4	51.3	969	-1.0	8.4	-3.0	12.5	5.6	5.1	16	99.5	56
967	7.3	51.2	900	-1.0	4.8	-3.0	12.3	5.8	4.1	16	99.5	55
968	7.0	50.7	804	-1.0	4.4	-3.0	12.0	6.8	4.0	16	99.5	55

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
969	7.0	50.8	796	-1.0	4.4	-3.0	11.9	6.2	4.6	16	99.5	55
970	7.0	50.2	790	-1.0	4.4	-3.0	11.9	6.7	4.4	16	99.5	55
971	7.0	50.5	799	-1.0	4.4	-3.0	11.9	6.5	3.7	16	99.5	55
972	7.2	51.3	879	-1.0	4.4	-2.7	12.3	6.1	4.9	16	99.5	55

Table E.02 Measurement data - Background

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 03/02/2016

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
1	6.6	40.9	0.2	2.9	13	99.4	70
2	10.3	40.7	0.2	4.5	13	99.4	70
3	10.7	40.9	0.3	4.7	13	99.4	70
4	12.2	41.7	0.3	5.3	13	99.4	70
5	11.8	41.5	0.4	5.2	13	99.4	70
6	12.0	43.1	0.4	5.2	13	99.4	70
7	11.2	44.3	0.2	4.9	13	99.4	70
8	8.4	42.1	0.3	3.7	13	99.4	70
9	8.7	40.9	0.3	3.8	13	99.4	70
10	10.0	40.8	0.2	4.4	13	99.4	70
11	12.6	40.8	0.2	5.5	13	99.4	70
12	9.2	42.5	0.2	4.0	13	99.4	70
13	6.1	42.3	0.3	2.6	13	99.4	70
14	8.9	41.5	0.3	3.9	13	99.4	70
15	9.0	41.4	0.3	3.9	13	99.4	70
16	8.2	42.4	0.4	3.6	13	99.4	70
17	6.2	42.0	0.4	2.7	13	99.4	70
18	4.3	41.3	0.4	1.9	13	99.4	70
19	6.2	40.0	0.5	2.7	13	99.4	70
20	4.9	40.1	0.6	2.2	13	99.5	70
21	4.1	40.2	0.4	1.8	13	99.5	70
22	5.6	41.1	0.4	2.5	13	99.5	70
23	6.6	41.5	0.4	2.9	13	99.5	70
24	6.3	40.9	0.5	2.7	13	99.5	70
25	6.7	41.6	0.4	2.9	13	99.5	70
26	7.4	41.3	0.3	3.3	13	99.4	70
27	6.0	43.1	0.3	2.6	13	99.4	70
28	7.3	43.8	0.3	3.2	13	99.4	70
29	11.0	44.8	0.3	4.8	13	99.4	70
30	10.2	43.9	0.3	4.5	13	99.4	70
31	10.0	44.8	0.4	4.4	13	99.4	70
32	14.9	43.4	0.4	6.5	13	99.4	70
33	13.9	44.1	0.4	6.1	13	99.4	70
34	9.7	42.9	0.3	4.2	13	99.4	70
35	7.3	41.1	0.4	3.2	13	99.4	70
36	9.0	39.8	0.4	3.9	13	99.4	70
37	9.8	40.8	0.5	4.3	13	99.4	70
38	10.0	41.2	0.4	4.4	13	99.4	70
39	12.9	40.7	0.4	5.6	13	99.4	70
40	9.1	41.4	0.2	4.0	13	99.4	70
41	7.5	41.2	0.4	3.3	13	99.4	70
42	7.8	41.6	0.4	3.4	13	99.4	70
43	8.2	42.0	0.4	3.6	13	99.4	70
44	7.7	42.0	0.6	3.4	13	99.5	70
45	12.0	42.2	0.4	5.3	13	99.5	70
46	10.4	41.7	0.4	4.6	13	99.5	70
47	11.9	41.9	0.4	5.2	13	99.5	70
48	8.2	42.9	0.3	3.6	13	99.5	70
49	12.5	41.1	0.4	5.5	13	99.5	70
50	13.6	41.2	0.3	6.0	13	99.4	70
51	7.2	41.9	0.4	3.2	13	99.4	70
52	5.1	41.8	0.3	2.2	13	99.4	70
53	4.4	42.2	0.4	1.9	13	99.4	70
54	7.3	42.8	0.4	3.2	13	99.4	70
55	10.1	41.9	0.4	4.4	13	99.4	70
56	9.6	43.6	0.4	4.2	13	99.4	70
57	7.9	41.8	0.5	3.5	13	99.4	70
58	4.5	40.7	0.4	2.0	13	99.4	70
59	7.4	41.5	0.4	3.2	13	99.4	70
60	10.2	41.3	0.3	4.5	13	99.4	70
61	13.5	41.9	0.3	5.9	13	99.4	70
62	10.8	46.0	0.3	4.7	13	99.4	71
63	10.4	41.2	0.3	4.5	13	99.4	71
64	12.0	40.3	0.3	5.3	13	99.4	71
65	11.8	40.7	0.3	5.2	13	99.4	71
66			0.4	4.3	13	99.4	71
67			0.3	6.0	13	99.4	71
68			0.5	4.9	14	99.4	70
69			0.4	4.0	14	99.4	70
70			0.3	3.8	14	99.4	70
71			0.3	4.6	14	99.4	70
72			0.3	4.7	14	99.4	70
73			0.3	5.3	14	99.4	70
74	14.4	40.8	0.3	6.3	14	99.4	70
75	11.5	40.0	0.3	5.0	14	99.4	70
76	14.3	37.6	0.2	6.3	14	99.4	70
77	9.7	38.4	0.2	4.3	14	99.4	70
78	11.5	41.9	0.2	5.0	14	99.4	70
79	9.5	39.8	0.2	4.2	14	99.4	70
80	8.8	38.4	0.2	3.9	13	99.4	69
81	9.5	38.0	0.3	4.2	13	99.4	69
82	11.8	38.5	0.4	5.2	13	99.4	69
83	10.0	39.1	0.2	4.4	13	99.4	69

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
84	8.0	37.2	0.3	3.5	13	99.4	69
85	7.1	37.6	0.3	3.1	13	99.4	69
86	6.9	36.4	0.4	3.0	13	99.4	71
87	7.9	36.3	0.3	3.5	13	99.4	72
88	11.1	37.0	0.4	4.9	13	99.4	72
89	8.1	38.2	0.4	3.6	13	99.4	72
90	7.6	37.6	0.4	3.3	13	99.4	72
91	8.0	38.8	0.3	3.5	13	99.4	72
92	10.6	38.4	0.3	4.6	14	99.4	71
93	14.0	38.9	0.4	6.1	14	99.4	71
94	13.7	39.0	0.3	6.0	14	99.4	71
95			0.1	3.5	14	99.4	71
96			0.1	2.8	14	99.4	71
97			0.3	3.7	14	99.4	71
98			0.4	2.3	14	99.4	70
99			0.4	1.9	14	99.4	70
100			0.3	2.7	14	99.4	70
101			0.2	3.0	14	99.4	70
102			0.3	3.9	14	99.4	70
103			0.4	3.6	14	99.4	70
104			0.4	3.8	14	99.4	70
105			0.4	4.6	14	99.4	70
106			0.4	5.1	14	99.4	70
107	12.8	38.9	0.3	5.6	14	99.4	70
108	10.7	38.4	0.4	4.7	14	99.4	70
109	10.3	38.3	0.3	4.5	14	99.4	70
110	12.0	38.2	0.3	5.2	14	99.4	70
111	12.1	37.9	0.3	5.3	14	99.4	70
112	8.4	37.6	0.4	3.7	14	99.4	70
113	8.5	37.7	0.4	3.7	14	99.4	70
114	9.3	39.4	0.4	4.1	14	99.4	70
115	7.4	41.6	0.4	3.2	14	99.4	70
116	9.8	40.9	0.3	4.3	14	99.4	70
117	8.8	42.1	0.4	3.9	14	99.4	70
118	6.4	40.3	0.5	2.8	14	99.4	70
119	7.4	39.9	0.4	3.2	14	99.4	70
120	7.3	40.0	0.4	3.2	14	99.4	70
121	6.0	38.2	0.4	2.6	14	99.4	70
122	10.0	38.5	0.3	4.4	14	99.4	69
123	7.3	38.2	0.2	3.2	14	99.4	69
124	16.1	38.1	0.2	7.0	14	99.4	69
125	16.6	47.8	0.3	7.3	14	99.4	69
126	11.2	49.6	0.3	4.9	14	99.4	69
127	12.5	42.6	0.3	5.5	14	99.4	69
128	13.0	50.1	0.3	5.7	14	99.4	69
129	10.8	49.4	0.4	4.7	14	99.4	69
130	6.3	38.5	0.3	2.8	14	99.4	69
131	6.6	39.2	0.2	2.9	14	99.4	69
132	3.6	45.2	0.1	1.6	14	99.4	69
133	4.0	40.6	0.2	1.8	14	99.4	69
134	12.8	41.5	0.2	5.6	14	99.4	70
135	12.7	41.3	0.2	5.6	14	99.4	70
136	14.1	44.7	0.3	6.2	14	99.4	70
137	9.7	48.1	0.3	4.3	14	99.4	70
138	7.3	40.1	0.3	3.2	14	99.4	70
139	8.6	38.3	0.4	3.8	14	99.4	70
140	9.4	38.8	0.4	4.1	14	99.4	70
141	8.6	40.1	0.3	3.7	14	99.4	70
142	7.5	39.7	0.3	3.3	14	99.4	70
143	9.2	40.4	0.2	4.0	14	99.4	70
144	9.8	38.7	0.2	4.3	14	99.4	70
145	9.0	39.0	0.3	3.9	14	99.4	70
146	7.5	37.8	0.2	3.3	14	99.4	69
147	8.3	38.0	0.3	3.6	14	99.4	69
148	9.8	37.7	0.3	4.3	14	99.4	69
149	12.7	40.9	0.3	5.6	14	99.4	69
150	12.9	42.9	0.3	5.7	14	99.4	69
151	12.6	42.9	0.3	5.5	14	99.4	69
152	13.6	42.3	0.3	5.9	14	99.4	68
153	10.8	40.4	0.4	4.7	14	99.4	68
154	14.1	43.3	0.3	6.2	14	99.4	68
155	16.0	43.5	0.3	7.0	14	99.4	68
156	16.3	43.0	0.3	7.2	14	99.4	68
157	13.7	44.1	0.3	6.0	14	99.4	68
158	14.6	40.9	0.3	6.4	14	99.4	69
159	11.6	39.9	0.3	5.1	14	99.4	69
160	10.5	40.7	0.3	4.6	14	99.4	69
161	11.4	38.0	0.3	5.0	14	99.4	69
162	15.1	40.6	0.3	6.6	14	99.4	69
163	15.0	39.0	0.3	6.5	14	99.4	69
164	13.0	41.4	0.4	5.7	14	99.4	68
165	12.7	41.0	0.3	5.5	14	99.4	68
166	8.0	44.9	0.4	3.5	14	99.4	68

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
167	8.8	44.5	0.3	3.8	14	99.4	68
168	13.4	45.2	0.3	5.9	14	99.4	68
169	9.7	40.1	0.2	4.3	14	99.4	68
170	11.4	39.3	0.2	5.0	14	99.4	69
171	12.4	42.3	0.5	5.4	14	99.4	69
172	12.1	40.9	0.4	5.3	14	99.4	69
173	11.0	36.7	0.4	4.8	14	99.4	69
174	10.6	39.9	0.5	4.6	14	99.4	69
175	12.7	41.2	0.4	5.6	14	99.4	69
176	11.4	42.9	0.3	5.0	14	99.4	69
177	7.8	41.2	0.4	3.4	14	99.4	69
178	10.5	39.7	0.3	4.6	14	99.4	69
179	10.1	39.0	0.3	4.4	14	99.4	69
180	9.1	40.9	0.3	4.0	14	99.4	69
181	5.5	41.4	0.4	2.4	14	99.4	69
182	3.3	40.0	0.3	1.5	14	99.4	69
183	7.9	38.6	0.3	3.4	14	99.4	69
184	13.1	38.9	0.3	5.7	14	99.4	69
185	5.3	40.2	0.4	2.3	14	99.4	69
186	7.8	37.9	0.4	3.4	14	99.4	69
187	9.8	37.9	0.3	4.3	14	99.4	69
188	8.4	38.5	0.4	3.7	14	99.4	69
189			8.5	4.5	15	99.4	63
190			8.2	5.9	15	99.4	62
191			8.2	5.3	15	99.4	62
192			8.9	5.2	15	99.4	62
193			9.9	5.0	15	99.4	62
194			10.3	6.3	15	99.4	62
195			9.7	5.8	15	99.4	62
196			8.9	5.3	15	99.4	61
197			8.6	5.1	15	99.4	61
198			10.0	6.7	15	99.4	61
199			12.9	5.1	15	99.4	61
200			14.3	4.5	15	99.4	61
201			14.2	5.6	15	99.4	61
202			14.1	4.7	15	99.4	61
203			14.0	4.1	15	99.4	61
204			12.9	3.6	15	99.4	61
205			12.2	4.5	15	99.4	61
206			12.0	5.0	15	99.4	61
207			11.5	5.4	15	99.4	61
208			10.8	5.0	15	99.4	61
209			10.8	4.5	15	99.4	61
210			11.6	3.6	15	99.4	61
211			12.5	2.1	15	99.4	61
212			12.5	3.3	15	99.4	61
213			13.2	2.9	15	99.4	61
214			14.5	2.2	15	99.4	62
215			14.4	2.0	15	99.4	62
216			14.3	1.9	15	99.4	62
217			14.4	2.7	15	99.4	62
218			14.3	4.8	15	99.4	62
219			14.3	2.6	15	99.4	62
220			14.3	2.7	15	99.4	62
221			14.3	3.3	15	99.4	61
222			14.1	4.4	15	99.4	61
223			14.2	2.9	15	99.4	61
224			14.3	3.8	15	99.4	61
225			13.9	4.6	15	99.4	61
226			13.3	3.2	15	99.4	62
227			12.6	3.0	15	99.4	63
228			13.1	2.7	15	99.4	63
229			12.8	2.3	15	99.4	63
230			13.0	2.3	15	99.4	63
231			14.3	1.8	15	99.4	63
232			14.5	2.4	15	99.4	63
233			14.6	3.8	15	99.4	63
234			14.5	2.8	15	99.4	63
235			14.7	3.8	15	99.4	63
236			12.4	3.3	15	99.4	63
237			5.1	2.3	15	99.4	63
238			1.3	2.1	15	99.4	62
239			0.5	3.5	15	99.4	62
240	10.0	41.3	0.3	4.4	15	99.4	62
241	9.6	42.5	0.5	4.2	15	99.4	62
242	10.9	41.1	0.5	4.7	15	99.4	62
243	11.0	45.6	0.4	4.8	15	99.4	62
244	10.0	42.2	0.4	4.4	15	99.4	61
245	8.6	41.7	0.4	3.7	15	99.4	61
246	6.4	39.7	0.5	2.8	15	99.4	61
247	3.7	41.0	0.5	1.6	15	99.4	61
248	4.8	40.0	0.3	2.1	15	99.4	61
249	8.4	41.1	0.2	3.7	15	99.4	61

Table E.02 Measurement data - Background

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 03/02/2016

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
250	7.0	41.5	0.4	3.1	15	99.4	61
251	12.1	41.6	0.5	5.3	15	99.5	62
252	12.3	41.4	0.3	5.4	15	99.5	62
253	11.8	41.1	0.4	5.2	15	99.5	62
254	10.0	42.5	0.4	4.4	15	99.5	62
255	8.3	42.3	0.4	3.6	15	99.5	62
256	10.7	41.3	0.5	4.7	15	99.5	62
257	11.6	41.5	0.5	5.1	15	99.4	61
258	8.8	40.4	0.3	3.9	15	99.4	61
259	7.7	40.2	0.2	3.4	15	99.4	61
260	6.1	41.4	0.2	2.7	15	99.4	61
261	6.9	45.0	0.4	3.0	15	99.4	61
262	4.5	40.3	0.4	2.0	15	99.4	62
263	4.9	39.9	0.4	2.1	15	99.5	63
264	6.2	38.3	0.5	2.7	15	99.5	63
265	4.8	39.0	0.5	2.1	15	99.5	63
266	4.2	39.8	0.4	1.8	15	99.5	63
267	7.2	40.2	0.3	3.1	15	99.5	63
268	5.6	46.4	0.3	2.4	15	99.5	63
269	5.7	41.7	0.2	2.5	15	99.5	63
270	5.8	42.9	0.2	2.6	15	99.5	63
271	4.7	42.5	0.2	2.0	15	99.5	63
272	5.0	44.1	0.3	2.2	15	99.5	63
273	5.3	38.5	0.4	2.3	15	99.5	63
274	6.6	39.5	0.2	2.9	15	99.5	63
275	8.8	40.9	0.3	3.8	15	99.4	63
276	6.7	41.4	0.4	2.9	15	99.4	63
277	9.2	42.1	0.3	3.6	15	99.4	63
278	9.7	41.2	0.2	4.3	15	99.4	63
279	8.6	40.2	0.4	3.8	15	99.4	63
280	7.5	40.3	0.6	3.3	15	99.4	63
281	7.7	41.9	0.4	3.4	15	99.4	62
282	8.8	43.2	0.3	3.8	15	99.4	62
283			0.2	4.3	15	99.4	62
284			0.3	4.3	15	99.4	62
285			0.3	3.5	15	99.4	62
286			0.3	3.2	15	99.4	63
287			0.3	2.7	15	99.5	63
288			0.4	2.7	15	99.5	63
289			0.3	2.7	15	99.5	63
290	4.6	44.0	0.4	2.0	15	99.5	63
291	5.1	43.9	0.2	2.2	15	99.5	63
292	7.8	42.5	0.3	3.4	15	99.5	63
293	13.3	42.1	0.5	5.8	15	99.4	63
294	11.1	41.4	0.4	4.9	15	99.4	63
295	11.2	40.8	0.3	4.9	15	99.4	63
296	6.1	41.2	0.3	2.7	15	99.4	63
297	8.9	41.5	0.4	3.9	15	99.4	63
298	14.4	40.9	0.4	6.3	15	99.4	63
299	14.0	38.6	0.5	6.1	15	99.4	63
300	13.8	43.1	0.3	6.0	15	99.4	63
301	11.1	42.9	0.5	4.9	15	99.4	63
302	7.2	43.9	0.4	3.2	15	99.4	63
303	7.2	42.1	0.3	3.2	15	99.4	63
304	8.0	42.6	0.3	3.5	15	99.5	63
305	8.9	43.7	0.4	3.9	15	99.5	62
306	8.9	43.7	0.4	3.9	15	99.5	62
307	7.3	43.7	0.4	3.2	15	99.5	62
308	5.4	42.0	0.6	2.4	15	99.5	62
309	8.6	43.9	0.4	3.8	15	99.5	62
310	9.4	41.4	0.3	4.1	15	99.5	62
311	8.4	42.2	0.5	3.7	15	99.4	61
312	4.5	40.1	0.4	1.9	15	99.4	61
313	5.3	42.6	0.5	2.3	15	99.4	61
314	7.0	43.8	0.4	3.1	15	99.4	61
315	14.0	46.4	0.5	6.1	15	99.4	61
316	14.2	44.8	0.6	6.2	15	99.4	60
317	16.8	44.3	0.5	7.4	15	99.4	60
318	17.0	43.9	0.3	7.4	15	99.4	60
319	12.6	45.4	0.3	5.5	15	99.4	60
320	10.6	42.6	0.3	4.7	15	99.4	60
321	12.4	41.9	0.3	5.4	15	99.4	60
322	10.4	39.8	0.3	4.5	15	99.4	60
323	11.9	42.2	0.3	5.2	15	99.4	60
324	14.0	43.5	0.3	6.1	15	99.4	60
325	10.6	46.0	0.3	4.6	15	99.4	60
326	9.6	43.3	0.2	4.2	15	99.4	60
327	8.2	43.8	0.1	3.6	15	99.4	60
328	4.9	45.9	0.3	2.1	15	99.4	61
329	6.1	44.9	0.5	2.7	15	99.4	62
330	10.1	44.3	0.5	4.4	15	99.4	62
331	11.7	44.5	0.3	5.1	15	99.4	62
332	6.5	43.8	0.3	2.8	15	99.4	62

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
333	7.7	43.7	0.3	3.4	15	99.4	62
334	12.7	46.2	0.1	5.6	15	99.4	62
335	10.7	45.1	0.1	4.7	15	99.5	62
336	10.6	47.1	0.2	4.6	15	99.5	62
337	8.8	47.4	0.3	3.9	15	99.5	62
338	10.9	46.4	0.3	4.8	15	99.5	62
339	9.8	47.7	0.4	4.3	15	99.5	62
340	7.1	47.0	0.3	3.1	15	99.5	61
341	9.2	43.7	0.3	4.0	15	99.5	61
342	8.2	44.4	0.3	3.6	15	99.5	61
343	7.1	44.8	0.3	3.1	15	99.5	61
344	7.5	44.6	0.3	3.3	15	99.5	61
345	6.3	44.0	0.3	2.7	15	99.5	61
346	7.1	45.6	0.5	3.1	15	99.5	61
347	6.4	46.7	0.5	2.8	15	99.4	61
348	7.2	43.2	0.5	3.2	15	99.4	61
349	8.8	43.6	0.6	3.9	15	99.4	61
350	7.4	44.3	0.5	3.2	15	99.4	61
351	9.3	45.3	0.5	4.1	15	99.4	61
352	13.2	44.1	0.6	5.8	15	99.4	61
353	12.2	45.2	0.5	5.3	15	99.4	61
354	11.7	45.2	0.4	5.1	15	99.4	61
355	12.9	43.8	0.4	5.6	15	99.4	61
356	12.6	45.3	0.5	5.5	15	99.4	61
357	3.7	45.8	0.4	1.6	15	99.4	61
358	4.6	45.7	0.4	2.0	15	99.4	61
359	6.2	46.6	0.4	2.7	15	99.5	62
360	13.6	43.5	0.4	5.9	15	99.5	62
361	12.6	41.9	0.4	5.5	15	99.5	62
362			0.5	4.1	15	99.5	62
363			0.5	4.2	15	99.5	62
364			0.3	4.3	15	99.5	62
365			0.5	4.7	15	99.4	61
366			0.8	4.0	15	99.4	61
367			0.7	2.8	15	99.4	61
368			0.5	3.9	15	99.4	61
369			0.5	5.1	15	99.4	61
370			0.5	4.3	15	99.4	61
371			0.5	4.6	15	99.4	61
372			0.5	3.0	15	99.4	61
373			0.6	4.0	15	99.4	61
374			0.6	7.1	15	99.4	61
375			0.4	5.7	15	99.4	61
376			0.5	3.7	15	99.4	61
377			0.5	4.6	15	99.4	62
378	11.1	43.9	0.3	4.9	15	99.4	62
379	5.8	43.8	0.4	2.5	15	99.4	62
380	8.1	44.0	0.5	3.5	15	99.4	62
381	6.8	45.7	0.3	3.0	15	99.4	62
382	2.7	45.5	0.2	1.2	15	99.4	62
383	3.8	45.5	0.3	1.7	15	99.4	62
384	8.8	45.8	0.5	3.9	15	99.4	62
385	9.6	45.9	0.5	4.2	15	99.4	62
386	11.0	45.7	0.5	4.8	15	99.4	62
387	12.0	44.1	0.5	5.3	15	99.4	62
388	10.7	41.6	0.4	4.7	15	99.4	62
389	11.8	43.3	0.3	5.2	15	99.4	61
390	10.8	41.9	0.4	4.7	15	99.4	61
391	11.1	42.6	0.4	4.8	15	99.4	61
392	9.7	41.5	0.4	4.3	15	99.4	61
393	10.7	42.0	0.3	4.7	15	99.4	61
394	9.6	43.5	0.3	4.2	15	99.4	61
395	11.2	43.6	0.4	4.9	15	99.4	61
396	9.4	43.6	0.6	4.1	15	99.4	61
397	11.0	43.3	0.5	4.8	15	99.4	61
398	11.9	43.6	0.3	5.2	15	99.4	61
399	11.8	44.4	0.3	5.2	15	99.4	61
400	9.4	44.1	0.3	4.1	15	99.4	61
401	6.3	45.0	0.5	2.8	15	99.4	62
402	7.0	46.3	0.4	3.1	15	99.4	62
403	7.1	46.7	0.6	3.1	15	99.4	62
404	11.1	46.8	0.5	4.9	15	99.4	62
405	10.7	46.4	0.5	4.7	15	99.4	62
406	7.2	45.8	0.6	3.1	15	99.4	62
407	8.0	45.5	0.5	3.5	15	99.4	62
408	9.9	46.2	0.4	4.4	15	99.4	62
409	8.8	45.3	0.4	3.9	15	99.4	62
410	9.9	46.0	0.4	4.4	15	99.4	62
411	16.3	42.5	0.4	7.1	16	99.5	55
412	15.2	40.2	0.6	6.7	16	99.5	55
413	14.8	40.1	0.4	6.5	16	99.5	55
414	13.6	39.5	0.4	5.9	16	99.5	55
415	8.1	40.0	0.4	3.5	16	99.5	56

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
416	8.9	39.6	0.4	3.9	16	99.5	56
417	9.5	39.5	0.4	4.2	16	99.5	56
418	8.6	42.5	0.4	3.8	16	99.5	56
419	4.1	42.8	0.4	1.8	16	99.5	56
420	8.0	43.0	0.4	3.5	16	99.5	56
421	13.3	43.8	0.4	5.8	16	99.5	56
422	8.5	43.4	0.4	3.7	16	99.5	56
423	8.1	45.4	0.5	3.5	16	99.5	56
424	7.9	44.5	0.4	3.4	16	99.5	56
425	5.9	47.0	0.3	2.6	16	99.5	56
426	7.2	46.0	0.3	3.2	16	99.5	56
427	6.5	44.0	0.4	2.8	16	99.5	56
428	6.2	42.4	0.4	2.7	16	99.5	56
429	4.3	41.9	0.5	1.9	16	99.5	56
430	4.5	44.6	0.5	2.0	16	99.5	56
431	3.4	42.4	0.5	1.5	16	99.5	56
432	4.0	42.4	0.4	1.8	16	99.5	56
433	4.0	43.2	0.4	1.7	16	99.5	57
434	6.6	44.0	0.3	2.9	16	99.5	57
435	7.3	44.7	0.5	3.2	16	99.5	57
436	5.9	43.5	0.4	2.6	16	99.5	57
437	9.0	41.0	0.4	3.9	16	99.5	57
438	8.6	40.3	0.4	3.8	16	99.5	57
439	10.1	40.6	0.3	4.4	16	99.5	56
440	9.2	41.5	0.3	4.0	16	99.5	56
441	8.1	41.3	0.3	3.5	16	99.5	56
442	10.6	42.7	0.4	4.6	16	99.5	56
443	10.4	44.0	0.6	4.6	16	99.5	56
444	10.9	43.7	0.7	4.8	16	99.5	56
445	9.5	42.7	0.4	4.2	16	99.5	56
446	7.1	41.9	0.4	3.1	16	99.5	56
447	9.1	41.2	0.5	4.0	16	99.5	56
448	10.4	41.2	0.5	4.5	16	99.5	56
449	8.8	40.8	0.6	3.9	16	99.5	56
450	8.1	40.8	0.6	3.6	16	99.5	56
451	8.0	40.9	0.4	3.5	16	99.5	56
452	7.3	40.9	0.3	3.2	16	99.5	56
453	7.6	41.9	0.3	3.3	16	99.5	56
454	9.1	40.3	0.3	4.0	16	99.5	56
455	8.6	40.4	0.5	3.8	16	99.5	56
456	9.4	38.9	0.7	4.1	16	99.5	56
457	9.9	38.8	0.6	4.3	16	99.5	57
458	14.5	37.7	0.5	6.4	16	99.5	57
459	13.3	37.6	0.5	5.8	16	99.5	57
460	11.0	37.9	0.5	4.8	16	99.5	57
461	11.0	39.0	0.5	4.8	16	99.5	57
462	9.9	42.4	0.4	4.3	16	99.5	57
463	8.7	44.5	0.4	3.8	16	99.5	57
464	9.3	42.5	0.6	4.1	16	99.5	57
465	11.8	41.7	0.6	5.2	16	99.5	57
466	9.0	42.3	0.5	4.0	16	99.5	57
467	14.9	41.9	0.4	6.5	16	99.5	57
468	14.3	40.7	0.4	6.3	16	99.5	57
469	11.4	40.1	0.4	5.0	16	99.5	56
470	13.3	40.2	0.3	5.8	16	99.5	56
471	13.9	38.7	0.4	6.1	16	99.5	56
472	10.9	38.1	0.5	4.8	16	99.5	56
473	9.3	38.0	0.5	4.1	16	99.5	56
474	8.8	38.5	0.6	3.8	16	99.5	56
475	10.9	36.6	0.7	4.8	16	99.5	57
476	14.1	36.1	0.7	6.2	16	99.5	57
477	13.3	36.4	0.8	5.8	16	99.5	57
478	12.8	36.7	0.6	5.6	16	99.5	57
479	20.3	37.3	0.4	8.9	16	99.5	57
480	20.9	37.5	0.4	9.2	16	99.5	57
481	18.1	38.0	0.2	7.9	16	99.5	55
482	12.4	38.5	0.4	5.4	16	99.5	55
483	10.5	40.8	0.6	4.6	16	99.5	55
484	10.4	39.1	0.4	4.5	16	99.5	55
485	8.3	37.6	0.4	3.6	16	99.5	55
486	10.7	38.4	0.3	4.7	16	99.5	55
487	14.1	40.7	0.3	6.2	16	99.5	56
488	12.1	40.7	0.2	5.3	16	99.5	56
489	16.5	41.8	0.1	7.2	16	99.5	56
490	17.1	38.2	0.4	7.5	16	99.5	56
491	17.7	38.6	0.5	7.7	16	99.5	56
492	16.8	40.9	0.4	7.3	16	99.5	56
493	13.4	40.3	0.5	5.9	16	99.5	57
494	14.1	40.4	0.5	6.2	16	99.5	57
495	11.7	42.9	0.7	5.1	16	99.5	57
496	11.3	41.1	0.5	4.9	16	99.5	57
497	13.4	41.3	0.4	5.9	16	99.5	57
498	12.7	40.6	0.3	5.6	16	99.5	57

Table E.02 Measurement data - Background

Project: Grand Renewable Wind Farm - Turbine T58 - IEC 61400-11 Edition 3.0 Measurement

Report ID: 14284.00.T58.RP1

Created on: 03/02/2016

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
499	13.9	39.9	0.4	6.1	16	99.5	56
500	11.8	38.9	0.4	5.2	16	99.5	56
501	13.5	39.9	0.3	5.9	16	99.5	56
502	9.5	39.5	0.2	4.2	16	99.5	56
503	4.6	38.8	0.4	2.0	16	99.5	56
504	6.4	37.8	0.4	2.8	16	99.5	56
505	8.7	38.7	0.4	3.8	16	99.5	56
506	8.4	39.2	0.5	3.7	16	99.5	57
507	10.3	38.6	0.4	4.5	16	99.5	57
508	9.8	38.0	0.3	4.3	16	99.5	57
509	14.3	38.4	0.2	6.3	16	99.5	57
510	12.4	38.3	0.4	5.4	16	99.5	57
511	9.9	39.3	0.5	4.3	16	99.5	56
512	9.9	39.2	0.4	4.3	16	99.5	56
513	12.0	38.6	0.4	5.3	16	99.5	56
514	11.5	39.2	0.4	5.0	16	99.5	56
515	11.7	40.7	0.3	5.1	16	99.5	56
516	13.1	40.0	0.4	5.7	16	99.5	56
517	12.8	39.9	0.5	5.6	16	99.5	57
518	11.6	42.5	0.5	5.1	16	99.5	57
519	12.9	41.1	0.4	5.6	16	99.5	57
520	15.3	40.9	0.4	6.7	16	99.5	57
521	14.6	41.6	0.4	6.4	16	99.5	57
522	13.2	40.8	0.5	5.8	16	99.5	57
523	10.5	38.5	0.4	4.6	16	99.5	56
524	14.9	38.2	0.4	6.5	16	99.5	56
525	19.2	38.5	0.4	8.4	16	99.5	56
526	16.1	39.5	0.5	7.0	16	99.5	56
527	15.9	39.9	0.4	7.0	16	99.5	56
528	14.2	40.3	0.3	6.2	16	99.5	56
529	17.9	40.5	0.4	7.8	16	99.5	56
530	18.4	40.3	0.4	8.1	16	99.5	56
531	15.6	40.1	0.3	6.8	16	99.5	56
532	16.5	40.5	0.3	7.2	16	99.5	56
533	15.7	39.9	0.2	6.9	16	99.5	56
534	13.1	40.2	0.4	5.7	16	99.5	56
535	16.6	40.1	0.3	7.3	16	99.5	57
536	15.1	39.9	0.2	6.6	16	99.5	57
537	12.0	40.5	0.2	5.2	16	99.5	57
538	10.7	39.8	0.3	4.7	16	99.5	57
539	10.4	42.0	0.3	4.6	16	99.5	57
540	10.2	41.0	0.3	4.4	16	99.5	57
541	10.8	39.9	0.3	4.7	16	99.5	57
542	13.0	41.3	0.2	5.7	16	99.5	57
543	15.1	41.0	0.2	6.6	16	99.5	57
544	10.2	40.7	0.3	4.5	16	99.5	57
545	7.6	41.7	0.4	3.3	16	99.5	57
546	9.5	41.9	0.3	4.2	16	99.5	57
547	7.6	39.7	0.4	3.3	16	99.5	56
548	10.2	40.2	0.4	4.5	16	99.5	56
549	9.2	40.7	0.3	4.0	16	99.5	56
550	11.3	40.4	0.3	5.0	16	99.5	56
551	10.2	44.0	0.4	4.5	16	99.5	56
552	10.8	42.7	0.5	4.7	16	99.5	56
553	12.4	44.2	0.5	5.4	16	99.5	56
554	16.5	43.5	0.5	7.2	16	99.5	56
555	18.5	42.5	0.5	8.1	16	99.5	56
556	14.2	42.3	0.3	6.2	16	99.5	56
557	12.0	41.7	0.2	5.3	16	99.5	56
558	12.3	41.7	0.2	5.4	16	99.5	56
559	12.9	41.1	0.4	5.7	16	99.5	56
560	9.1	42.4	0.5	4.0	16	99.5	56
561	9.9	41.3	0.5	4.3	16	99.5	56
562	13.5	41.4	0.4	5.9	16	99.5	56
563	12.7	40.2	0.3	5.5	16	99.5	56
564	12.7	41.7	0.2	5.5	16	99.5	56
565	15.4	41.2	0.3	6.7	16	99.5	56
566	13.5	42.5	0.4	5.9	16	99.5	56
567	12.7	43.1	0.3	5.5	16	99.5	56
568	12.1	41.0	0.3	5.3	16	99.5	56
569	10.9	44.9	0.3	4.8	16	99.5	56
570	10.3	44.3	0.3	4.5	16	99.5	56
571	13.2	43.1	0.2	5.8	16	99.5	57
572	15.7	44.9	0.1	6.9	16	99.5	57
573	16.6	46.9	0.3	7.3	16	99.5	57
574	14.4	43.3	0.2	6.3	16	99.5	57
575	13.4	42.5	0.3	5.9	16	99.5	57
576	11.9	41.2	0.4	5.2	16	99.5	57
577	12.4	38.7	0.4	5.4	16	99.5	56
578	11.8	38.0	0.3	5.2	16	99.5	56
579	8.8	37.0	0.3	3.9	16	99.5	56
580	10.7	38.1	0.4	4.7	16	99.5	56
581	13.3	37.2	0.3	5.8	16	99.5	56

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
582	10.5	38.4	0.4	4.6	16	99.5	56
583	9.5	37.1	0.2	4.2	16	99.5	58
584	9.4	37.9	0.4	4.1	16	99.5	58
585	9.2	38.7	0.3	4.0	16	99.5	58
586	6.6	39.0	0.3	2.9	16	99.5	58
587	5.4	38.8	0.5	2.3	16	99.5	58
588	7.8	38.3	0.4	3.4	16	99.5	58
589	7.8	36.9	0.4	3.4	16	99.5	58
590	9.0	36.9	0.4	3.9	16	99.5	58
591	7.7	37.7	0.3	3.4	16	99.5	58
592	10.9	38.5	0.3	4.8	16	99.5	58
593	14.4	38.0	0.3	6.3	16	99.5	58
594	13.8	39.1	0.3	6.0	16	99.5	58
595	12.3	40.1	0.5	5.4	16	99.5	56
596	11.7	40.4	0.6	5.1	16	99.5	56
597	10.7	39.1	0.4	4.7	16	99.5	56
598	13.6	39.1	0.5	5.9	16	99.5	56
599	14.2	40.0	0.7	6.2	16	99.5	56
600	15.1	39.2	0.8	6.6	16	99.5	56
601	14.9	38.8	0.9	6.5	16	99.5	56
602	11.4	38.5	0.7	5.0	16	99.5	56
603	11.4	38.6	0.4	5.0	16	99.5	56
604	12.5	39.0	0.3	5.5	16	99.5	56
605	11.0	38.3	0.3	4.8	16	99.5	56
606	12.4	41.8	0.4	5.4	16	99.5	56
607	13.1	40.3	0.4	5.7	16	99.5	56
608	11.8	38.7	0.4	5.1	16	99.5	56
609	11.9	39.3	0.5	5.2	16	99.5	56
610	11.4	38.9	0.6	5.0	16	99.5	56
611	11.7	40.0	0.5	5.1	16	99.5	56
612	11.8	39.1	0.3	5.2	16	99.5	56
613	14.8	41.2	0.2	6.5	16	99.5	56
614	14.7	40.2	0.2	6.4	16	99.5	56
615	14.1	40.4	0.2	6.2	16	99.5	56
616	16.3	42.3	0.2	7.1	16	99.5	56
617	15.6	39.2	0.2	6.8	16	99.5	56
618	11.7	39.8	0.2	5.1	16	99.5	56
619	14.4	39.6	0.2	6.3	16	99.5	56
620	15.2	39.7	0.2	6.7	16	99.5	56
621	21.6	38.9	0.3	9.5	16	99.5	56
622	20.9	39.9	0.2	9.2	16	99.5	56
623	17.2	39.7	0.2	7.5	16	99.5	56
624	13.5	42.7	0.2	5.9	16	99.5	56
625	11.4	46.9	0.4	5.0	16	99.5	56
626	12.5	43.6	0.5	5.5	16	99.5	56
627	11.3	42.9	0.4	5.0	16	99.5	56
628	13.6	42.3	0.4	6.0	16	99.5	56
629	17.9	41.1	0.4	7.8	16	99.5	56
630	17.0	41.5	0.5	7.5	16	99.5	56
631	16.3	40.0	0.4	7.1	16	99.5	55
632	18.1	41.4	0.3	7.9	16	99.5	55
633	16.5	42.3	0.4	7.2	16	99.5	55
634	12.6	39.7	0.4	5.5	16	99.5	55
635	11.0	41.0	0.3	4.8	16	99.5	55
636	11.9	39.1	0.3	5.2	16	99.5	55
637	10.4	42.5	0.3	4.5	16	99.5	56
638	10.8	40.1	0.3	4.7	16	99.5	56
639	8.8	40.1	0.3	3.8	16	99.5	56
640	8.7	40.4	0.4	3.8	16	99.5	56
641	11.8	40.4	0.3	5.2	16	99.5	56
642	7.8	39.1	0.4	3.4	16	99.5	56
643	7.9	38.1	0.3	3.5	16	99.5	56

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End of Report