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REPORT ID: **14462.00.T80.RP5**

Jericho Wind Energy Centre – Turbine T80
IEC 61400-11 Edition 3.0 Measurement Report

Prepared for:

Jericho Wind LP
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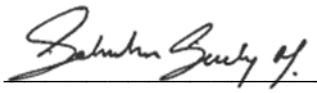

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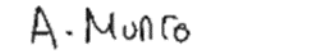
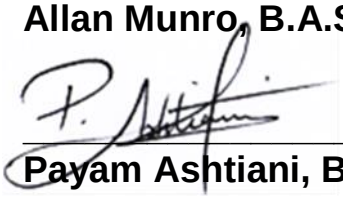


Allan Munro, B.A.Sc.



Payam Ashtiani, B.A.Sc. P.Eng.

02 March 2018 – Revision 5

Revision History

Revision Number	Description	Date
1	Issued Edition 2.1 test report	11/19/2015
2	Minor Revisions to Table 3	12/17/2015
3	Issued Edition 3.0 test report	11/07/2017
4	Corrections to Table 8	02/06/2018
5	Update to Edition 3.0 test report Section 3.2.1 and Appendix G Information for Regulator	03/02/2018

This report in its entirety, including appendices contains 146 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.

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1 Introduction

Aercoustics Engineering Limited (Aercoustics) was retained by Jericho Wind LP ("Jericho") to conduct an acoustic measurement of turbine T80 at the Jericho Wind Energy Centre. 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 T80.

2 Wind Turbine Information

2.1 Wind turbine equipment specific information

Wind turbine specific equipment information for turbine T80 was provided by GE Energy and is summarized in Tables 1 – 5.

Table 1 - Wind Turbine Details

Wind Turbine Details	
Manufacturer	General Electric
Model Number	1.6-100
Turbine ID	T80

Table 2 - Operating Details

Operating Details	
Vertical or Horizontal axis wind turbine	Horizontal
Upwind or downwind rotor	Upwind
Hub height	80m
Horizontal distance from rotor centre to tower axis	4100mm
Diameter of rotor	100m
Tower type (lattice or tube)	Tube
Passive stall, active stall, or pitch controlled turbine	Pitch control
Constant or variable speed	Variable speed
Power curve	See Figure B.01
Rotational speed at each integer standardised wind speed	See Figure B.02
Rated power output	1.6MW
Control software version	ToolBox 44.73.08

Table 3 - Rotor Details

Rotor Details	
Rotor control devices	Electrical Motors
Presence of vortex generators, stall strips, serrated trailing edges	Yes
Blade type	TPI
Serial number	32587, 60392, 60350
Number of blades	3

Table 4 - Gearbox Details

Gearbox Details	
Manufacturer	Nanjing
Model number	FDMD
Serial number	E07667-101-04752-W924

Table 5 - Generator Details

Generator Details	
Manufacturer	GE
Model number	IP54TFFOAN 108W6087P001
Serial number	G07663-105-03967-W930

2.2 Wind Turbine Location

Turbine T80 is located in the municipality of Lambton Shores, approximately 750m east of Arkona road. The area surrounding T80 is flat and consists primarily of farmland.

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 T80 is summarized in Table 6.

Table 6 - Acoustic Measurement Equipment

Equipment	Manufacturer Name & Model	Serial Number
Acoustic Data acquisition system	LMS SCADA Mobile	53103922
Microphone	B&K 4189	2625197
Pre-amplifier	B&K 2671	2614901
Acoustic calibrator	B&K 4231	2513182

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 yaw position from turbine T80. 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	G4420002
Serial to Analog Converter	NOKEVAL 7470	A159784

3.2 Measurement Setup

3.2.1 Microphone Placement

The measurement microphone was setup 130m 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 T80. The slant distance (R_1) from microphone location to rotor centre includes the distance from rotor center (hub) to tower axis (R_1 = 156m^2). 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 monitoring 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 T80 were taken, the surrounding land was not planted with any type of crop; therefore, the surrounding land influence on the measurement as considered 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
April 24,2015	Background	10:02am	10:36am
	Turbine ON	10:40am	12:04pm
	Background	12:07pm	1:07pm
	Turbine ON	1:14pm	2:19pm
	Turbine ON	2:22pm	2:48pm
April 27,2015	Background	10:33am	11:41am
	Turbine ON	2:17pm	3:22pm

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 T80's power curve (as per the standard), while wind direction was provided by T80's yaw position. Background data was obtained from an anemometer located 10m above ground level near T80. Temperature and pressure readings during the measurement period were provided by the 10m anemometer, located near turbine T80 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

Originally, the test contract required measurements in accordance to edition 2.1 of the standard (61400-11) which requires the anemometer to be placed upwind of the turbine. This test report is a reprocessing of the originally acquired data and as such, during the test, the anemometer position was erected in an upwind (Ed 2.1), rather than crosswind (Ed 3.0) position relative to the test turbine.

The acoustic signal to noise ratio for the noise levels is >12 dB for all wind bins, and as such, the effect of this deviation on the resulting sound power levels are expected to be negligible. This method is in accordance with recommendations made by the convenor of the IEC 61400-11 working group and is detailed in Note N6.023.17 and is provided in Appendix F.

4.2 Special Notes & Considerations

TurbineT81 was in immediate vicinity of T80; therefore, it was parked for the duration of the test.

4.3 Analysis Details

The following section outlines analysis of the measurement data acquired for T80. 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 (dB)	Used (dB)
Calibration	0.2	0.2
Board	0.3	0.3
Distance & direction	0.1	0.1
Air absorption	0	0
Weather conditions	0.5	0.5
Wind speed measured	0.7	0.7
Wind speed derived	0.2	0.2
Wind speed from power curve	0.2	0.2

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 L_{eq}, (dBA)	Turbine ON # of data pts	Background L_{eq}, (dBA)	Background # of data pts	Turbine ON, Background adjusted L_{eq}, (dBA)
7	48.7	118	36.4	59	48.5
7.5	50.5	106	36.0	66	50.3
8	51.6	61	37.2	60	51.4
8.5	52.3	34	38.7	80	52.1
9	53.5	17	39.7	62	53.3
9.5	54.1	60	41.0	54	53.9
10	54.2	71	40.4	40	54.0
10.5	54.4	53	42.3	35	54.1
11	54.5	25	41.9	20	54.3

4.6 Sound Power Level of Turbine

The calculated sound power level of the turbine T80 (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	97.3	0.8
7.5	99.2	0.7
8	100.3	0.7
8.5	100.9	0.8
9	102.1	0.7
9.5	102.8	0.7
10	102.8	0.7
10.5	102.9	0.7
11	103.1	0.7

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

Wind Speed (m/s)	Apparent L_{WA}, (dBA)	Uncertainty (dB)
5	97.6	0.7
6	100.8	0.7
7	102.7	0.7
8	103.2	0.7

4.7 Tonality Analysis

The tonality analysis for Turbine T80 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 (%)
7	126	-3.7	-1.7	117	118	99
	485	-2.1	0.2	33	118	28
	512	-3.8	-1.5	70	118	59
7.5	134	2.8	4.8	106	106	100
	1076	-5.5	-2.7	79	106	75
8	140	3.3	5.3	61	61	100
8.5	131	2.0	4.1	7	34	21
9	149	-1.5	0.5	17	17	100
	616	-4.8	-2.4	15	17	88
9.5	155	-2.7	-0.7	60	60	100
	630	0.1	2.5	49	60	82
10	155	-2.6	-0.6	71	71	100
	629	-0.4	2.0	57	71	80
10.5	155	-2.6	-0.6	53	53	100
	627	-1.1	1.3	51	53	96
11	155	-2.7	-0.6	25	25	100
	626	-0.1	2.3	25	25	100

5 Closure

Measurements and analysis were carried on Turbine T80 of the Jericho Wind Energy Centre, located in the municipality of Lambton Shores 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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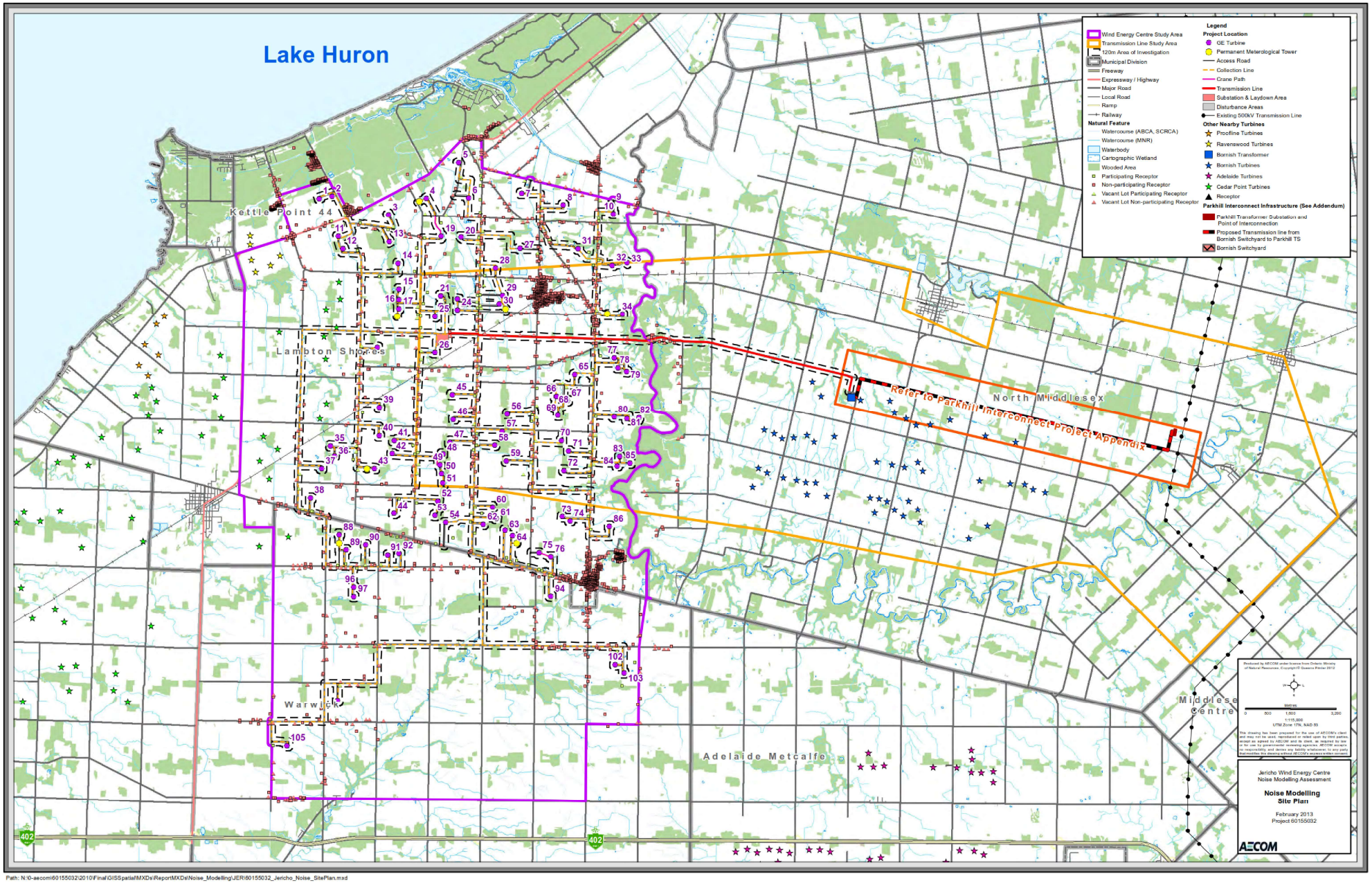
Appendix A
Site Details



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14462.00.T80.RP5	**Project Name**
Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0
	Figure Title Site Plan

Figure A.01

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	Figure Title Site Photos

Figure A.02

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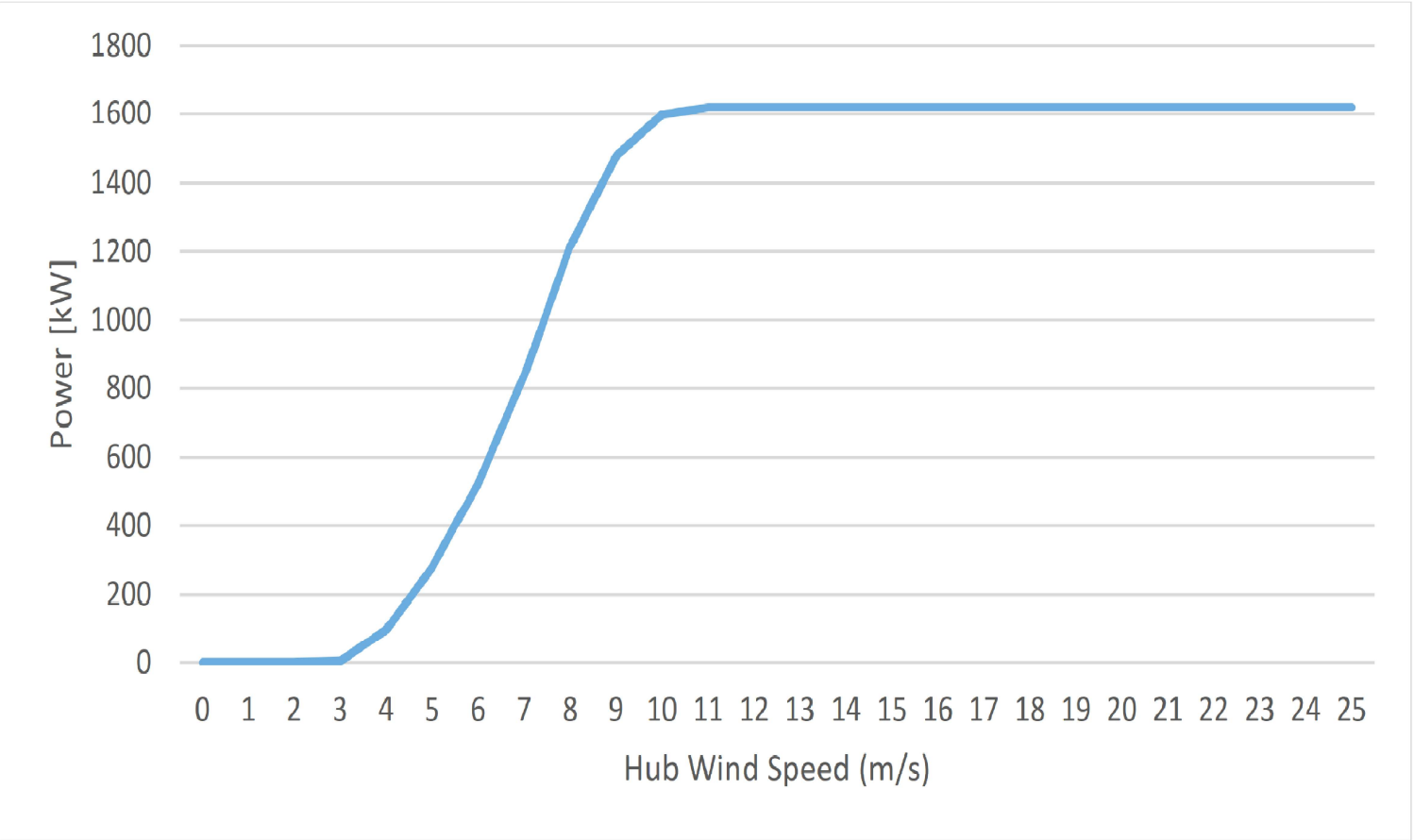
Appendix B
Turbine Information



Power Curve	
Hub Wind Speed (m/s)	Power [kW]
0	0
1	0
2	0
3	4
4	97
5	280
6	526
7	835
8	1216
9	1478
10	1597
11	1620
12	1620
13	1620
14	1620
15	1620
16	1620
17	1620
18	1620
19	1620
20	1620
21	1620
22	1620
23	1620
24	1620
25	1620

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14462.00.T80.RP5

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Drawn by: SS
Reviewed by: AM
Date: Oct 25, 2017
Revision: 1

Project Name

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Figure Title

Power Curve

Figure B.01

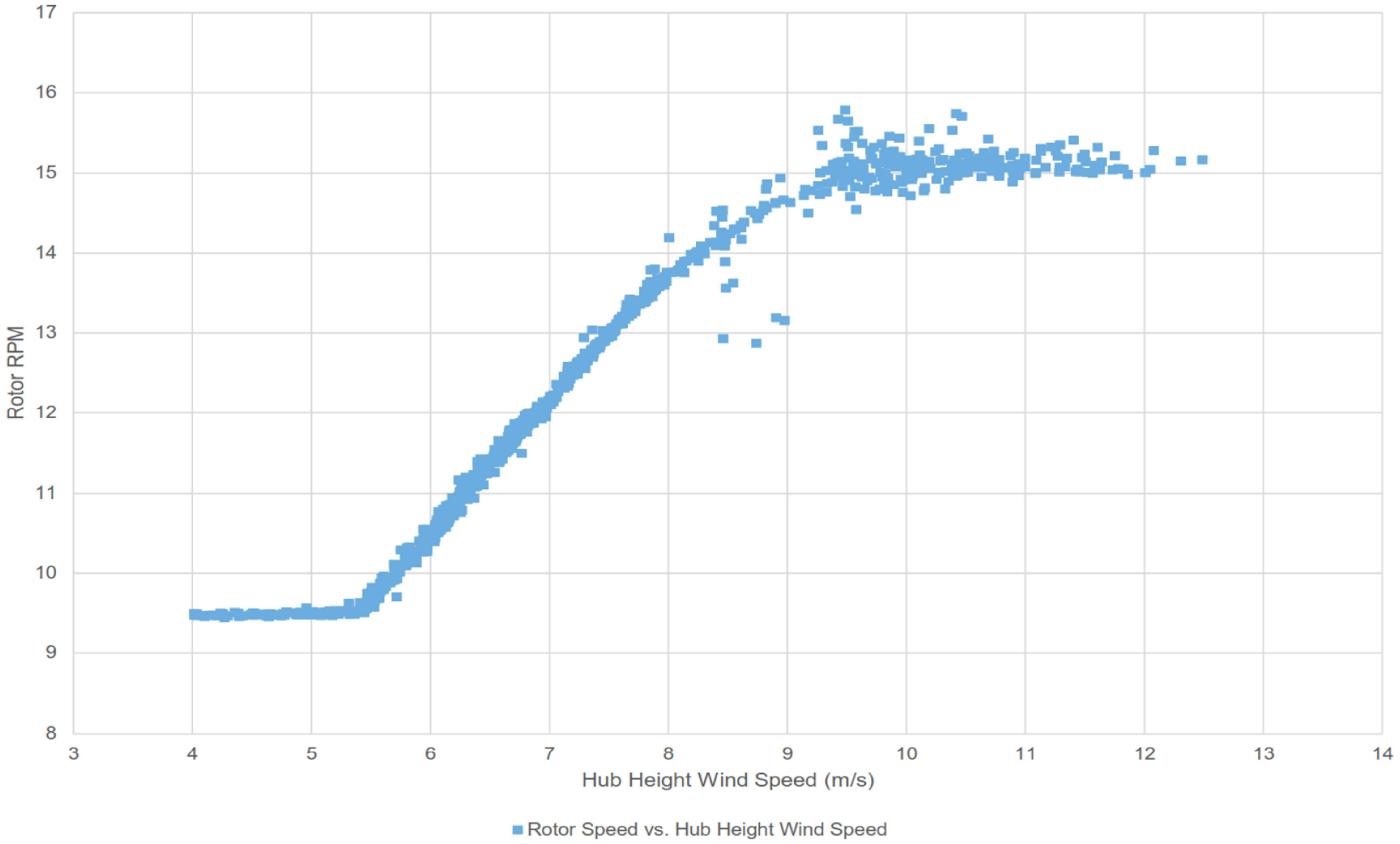

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Figure B.02

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Appendix C
Apparent Sound Power Level

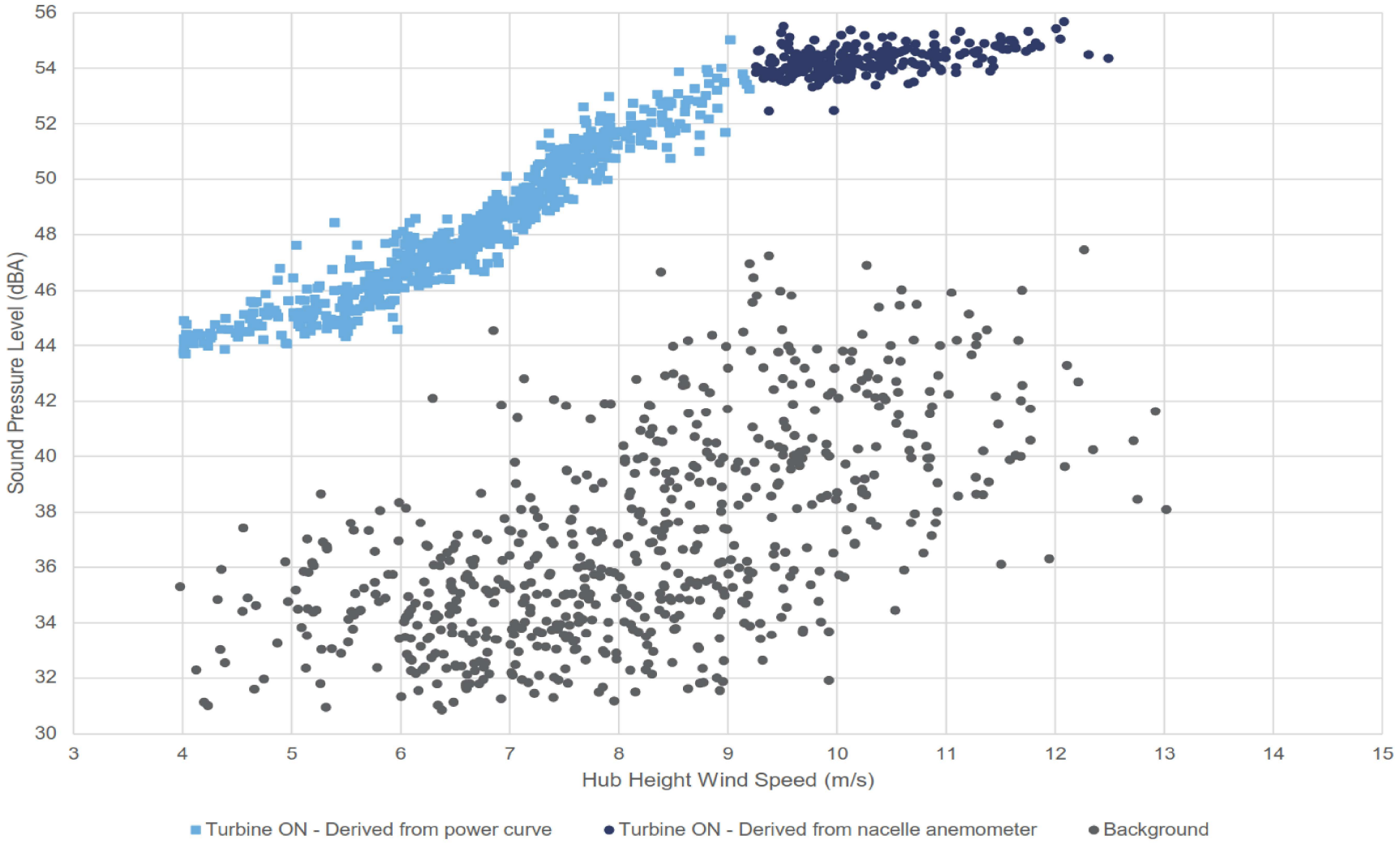

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Figure C.01

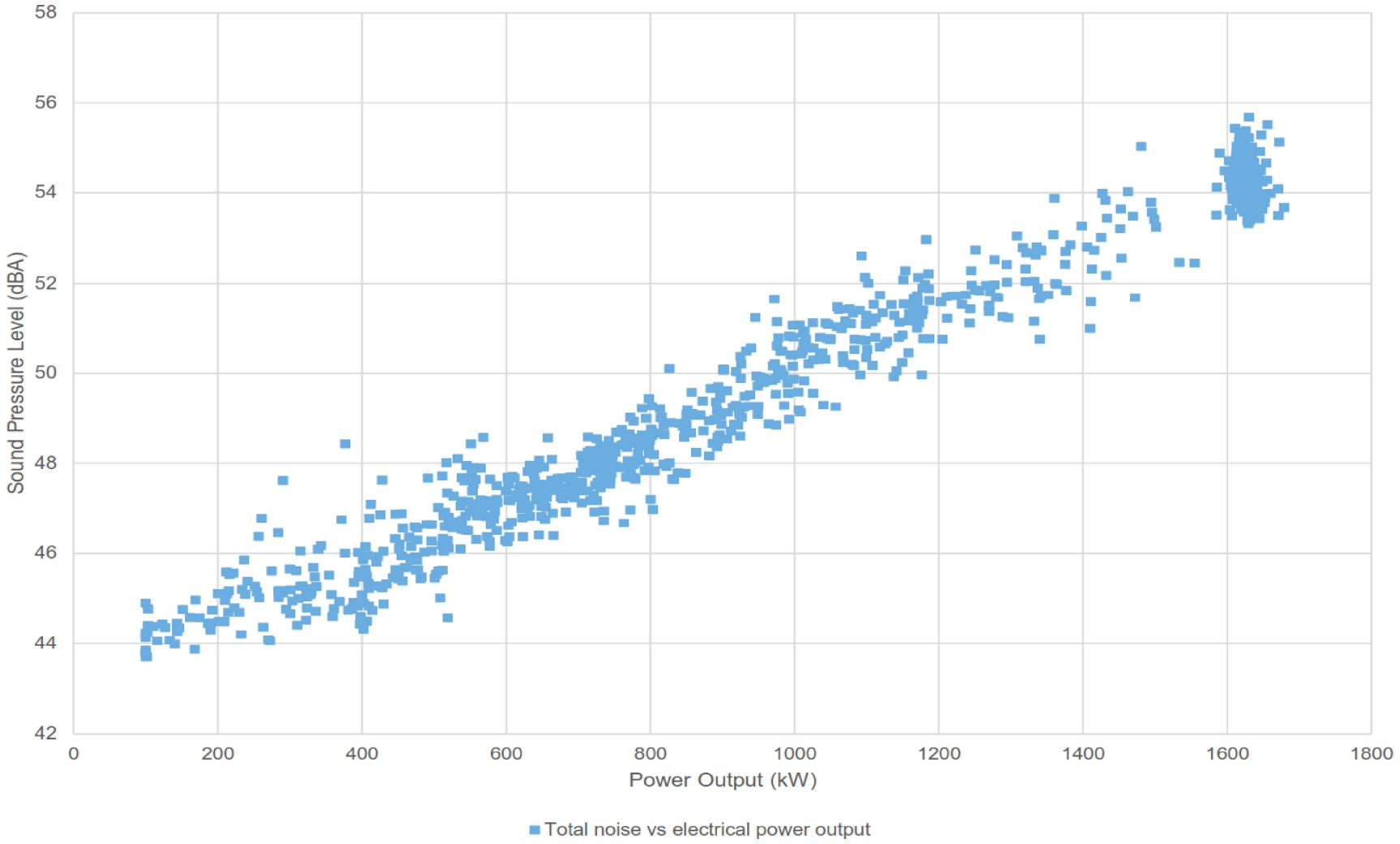

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Figure C.02

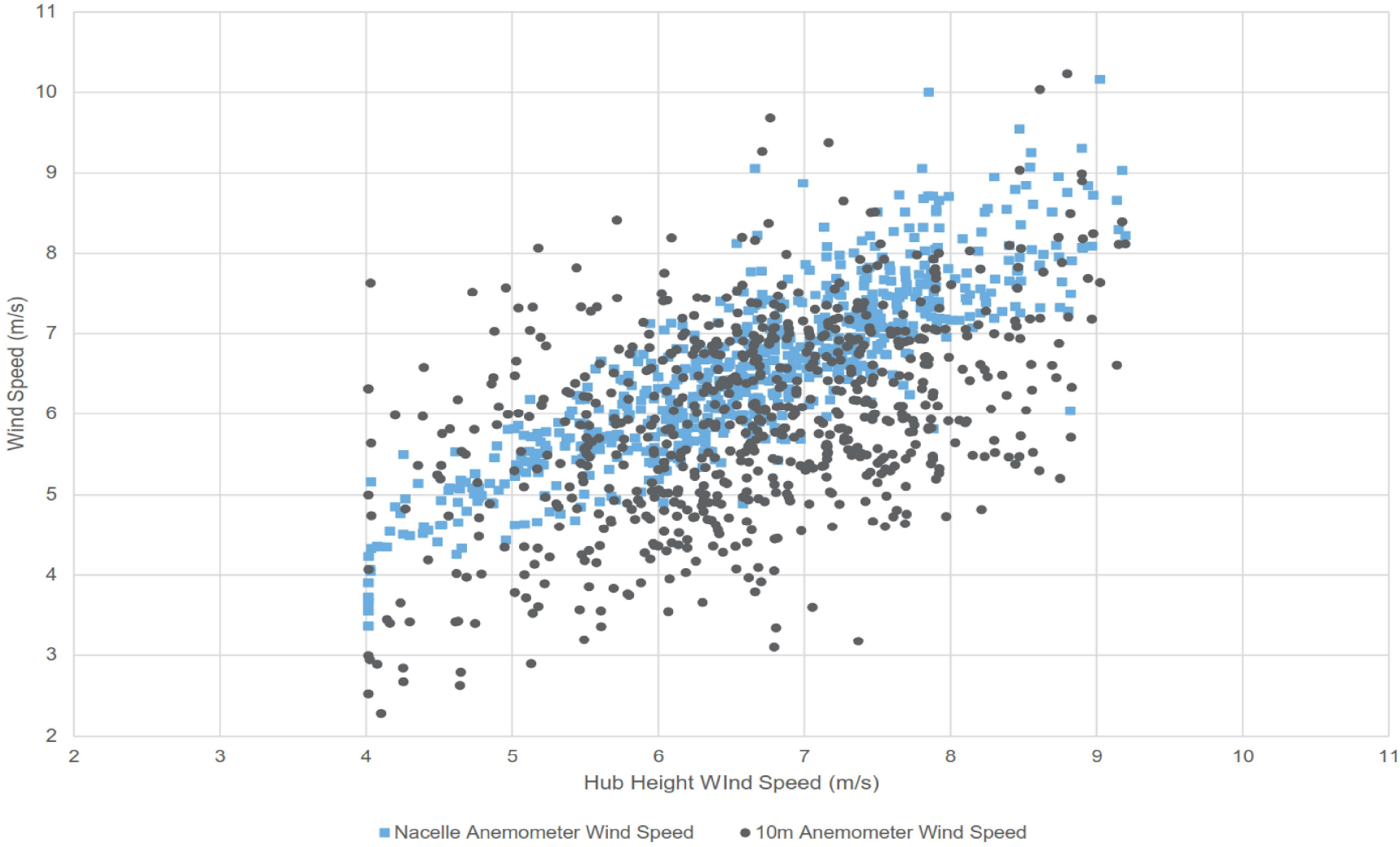

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Figure C.03

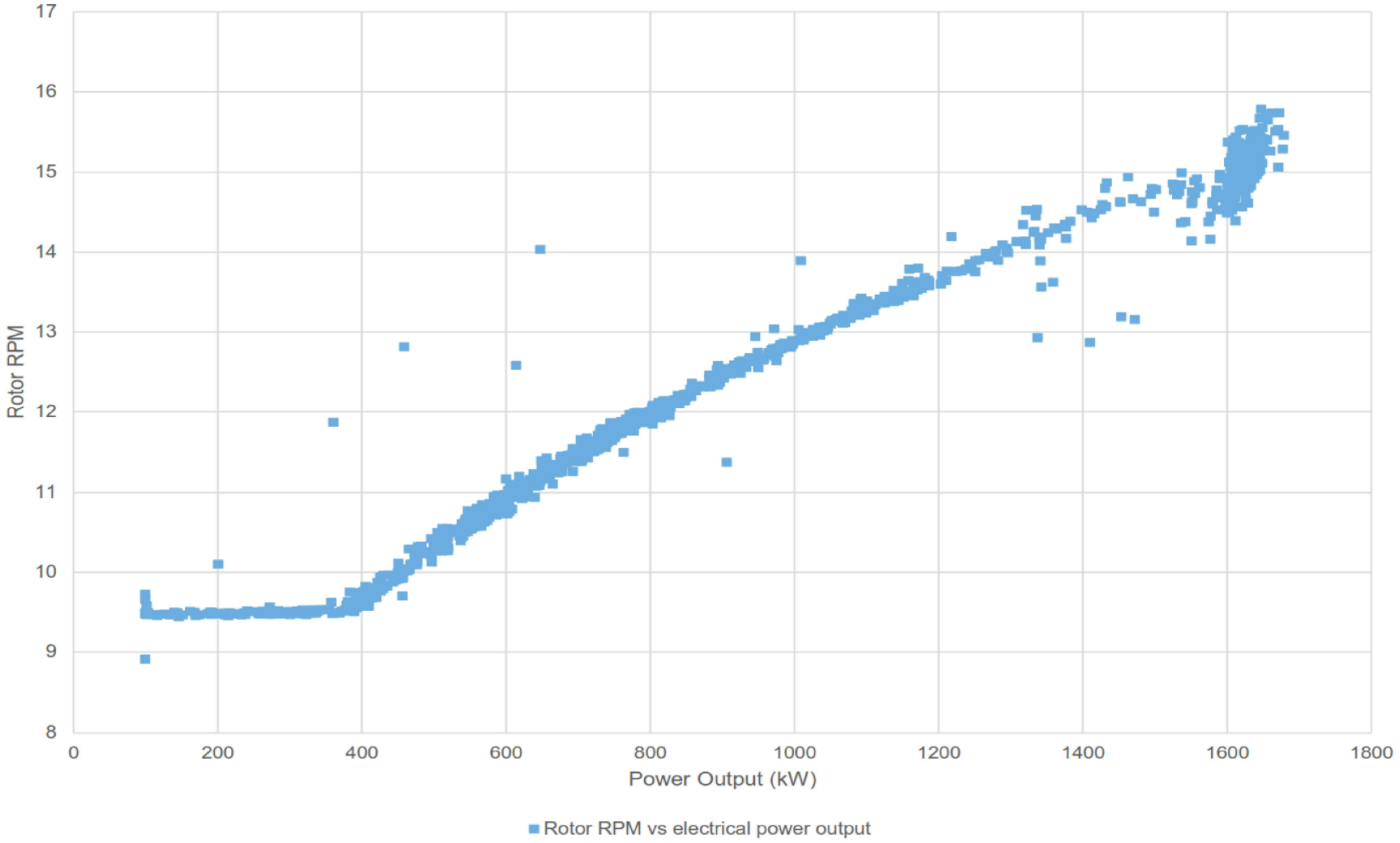

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Figure C.04

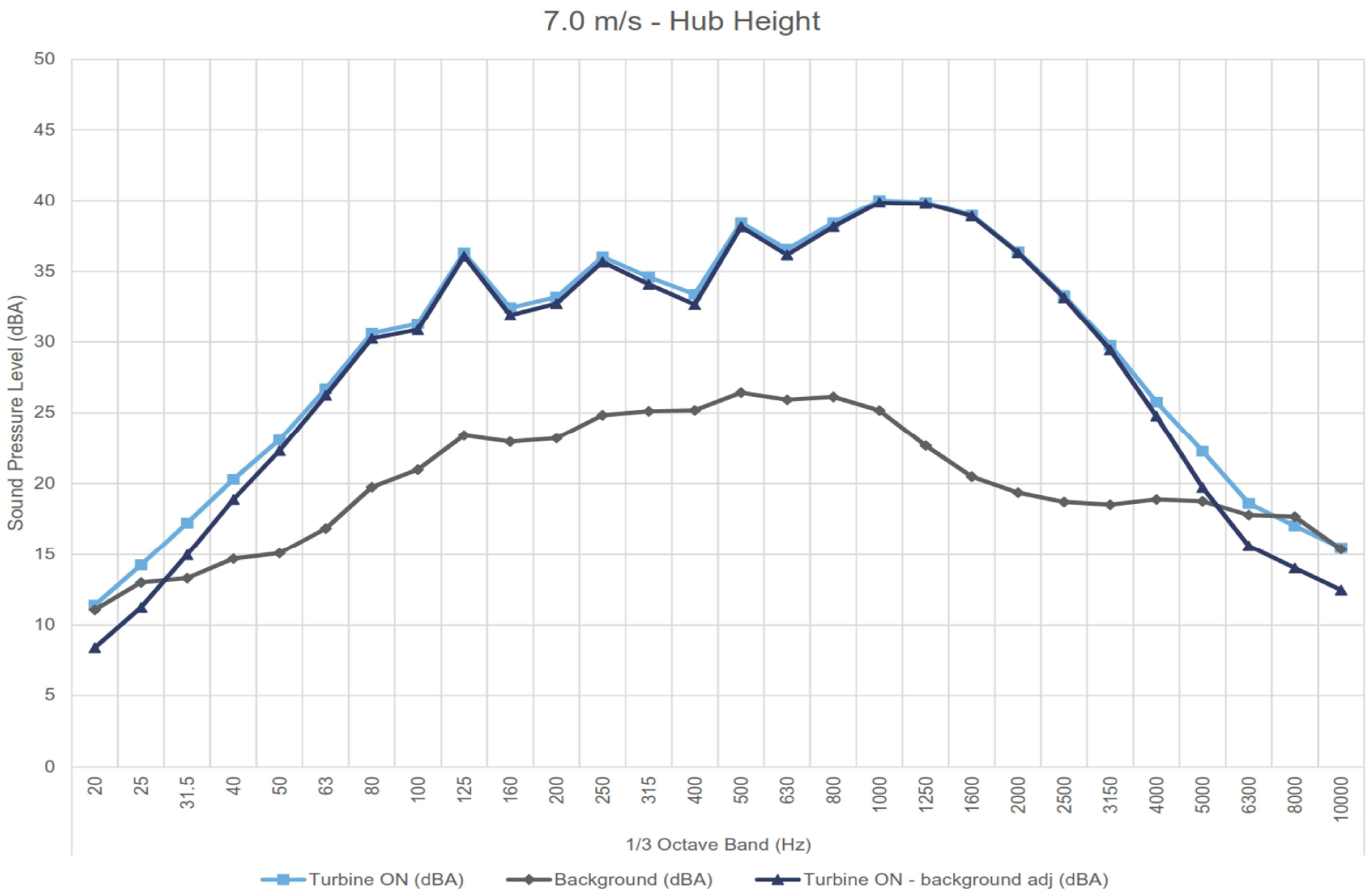

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Figure C.05

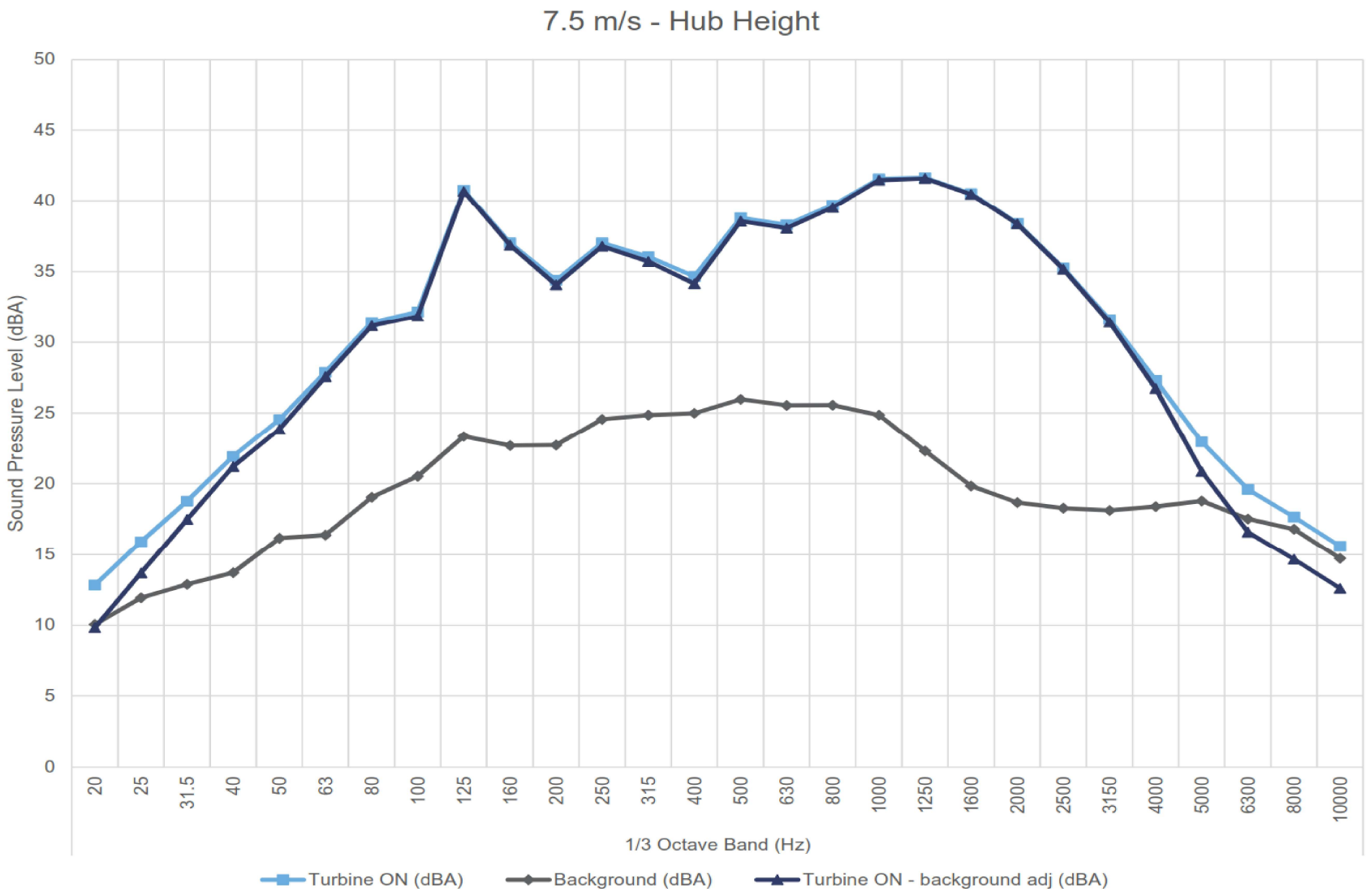

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Figure C.06

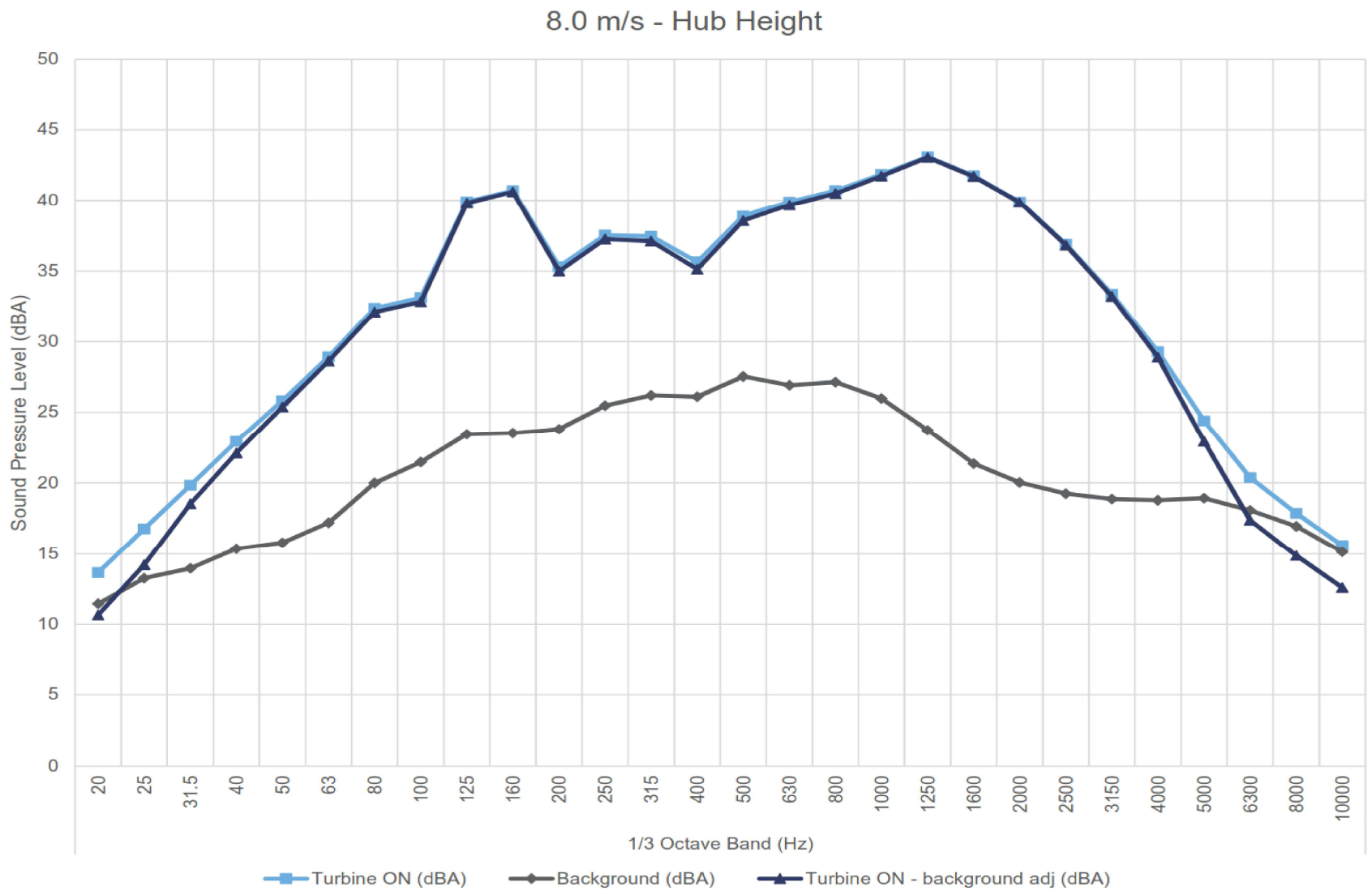

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Figure C.07

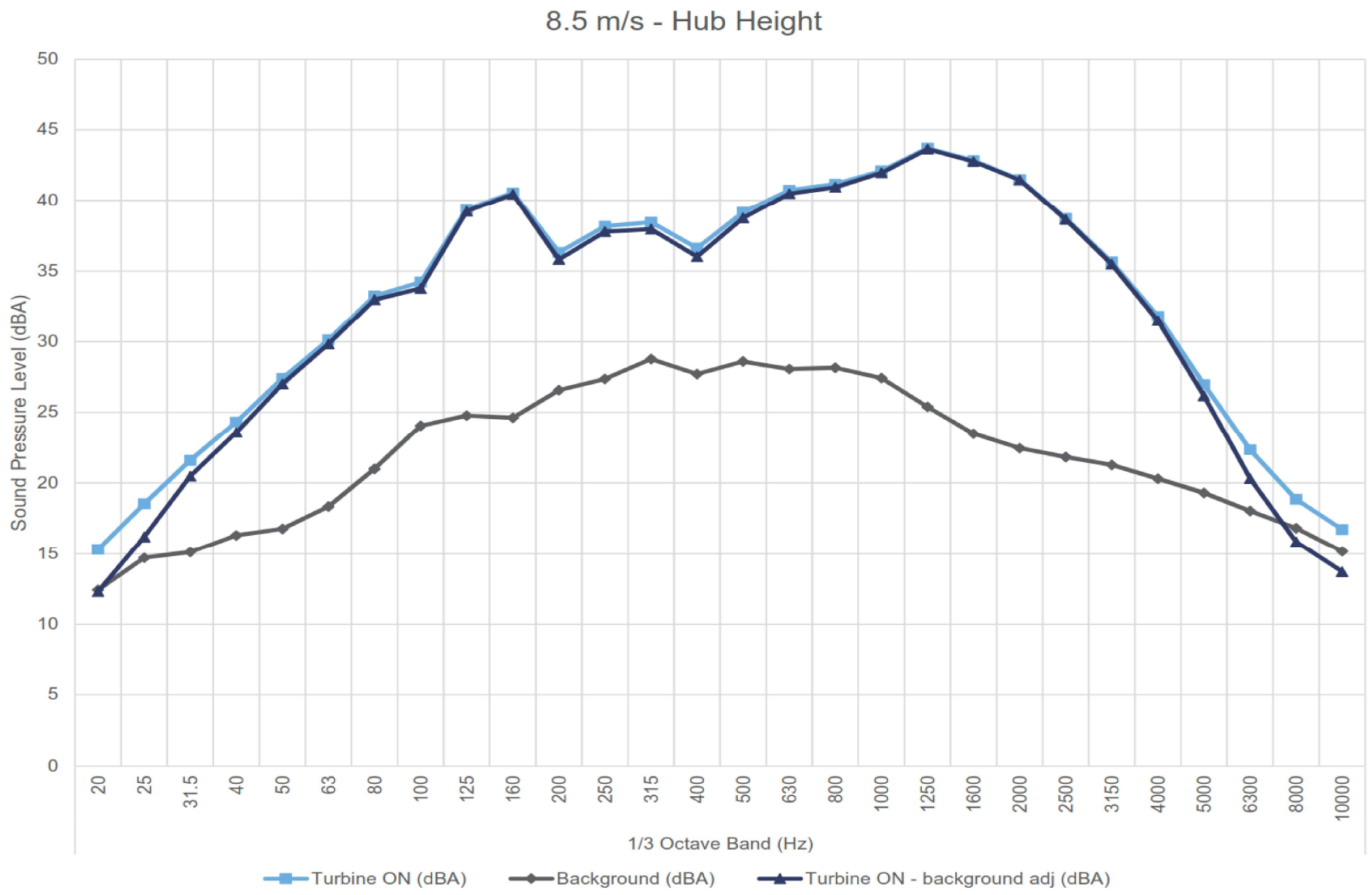

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Figure C.08

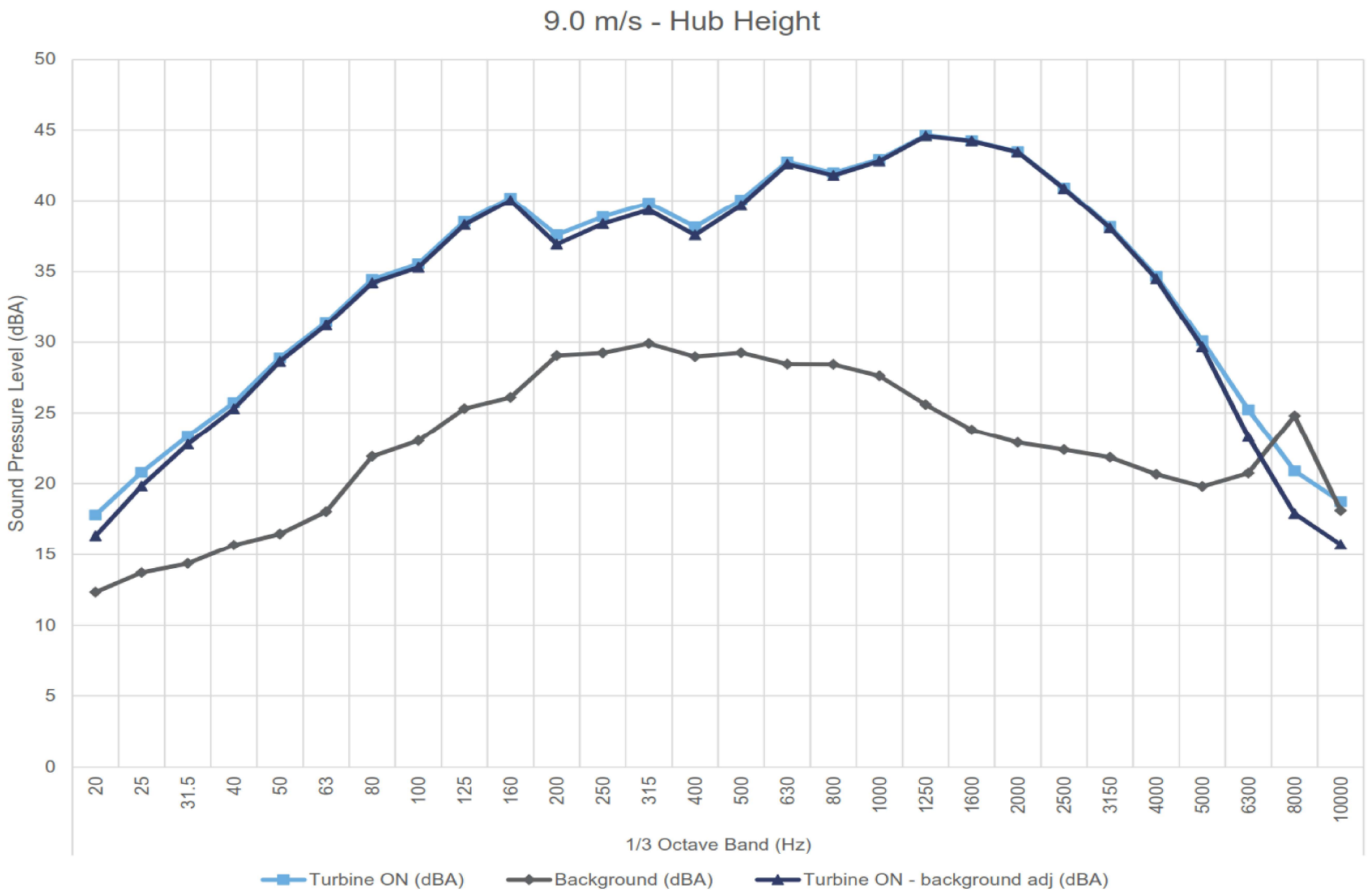

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Figure C.09

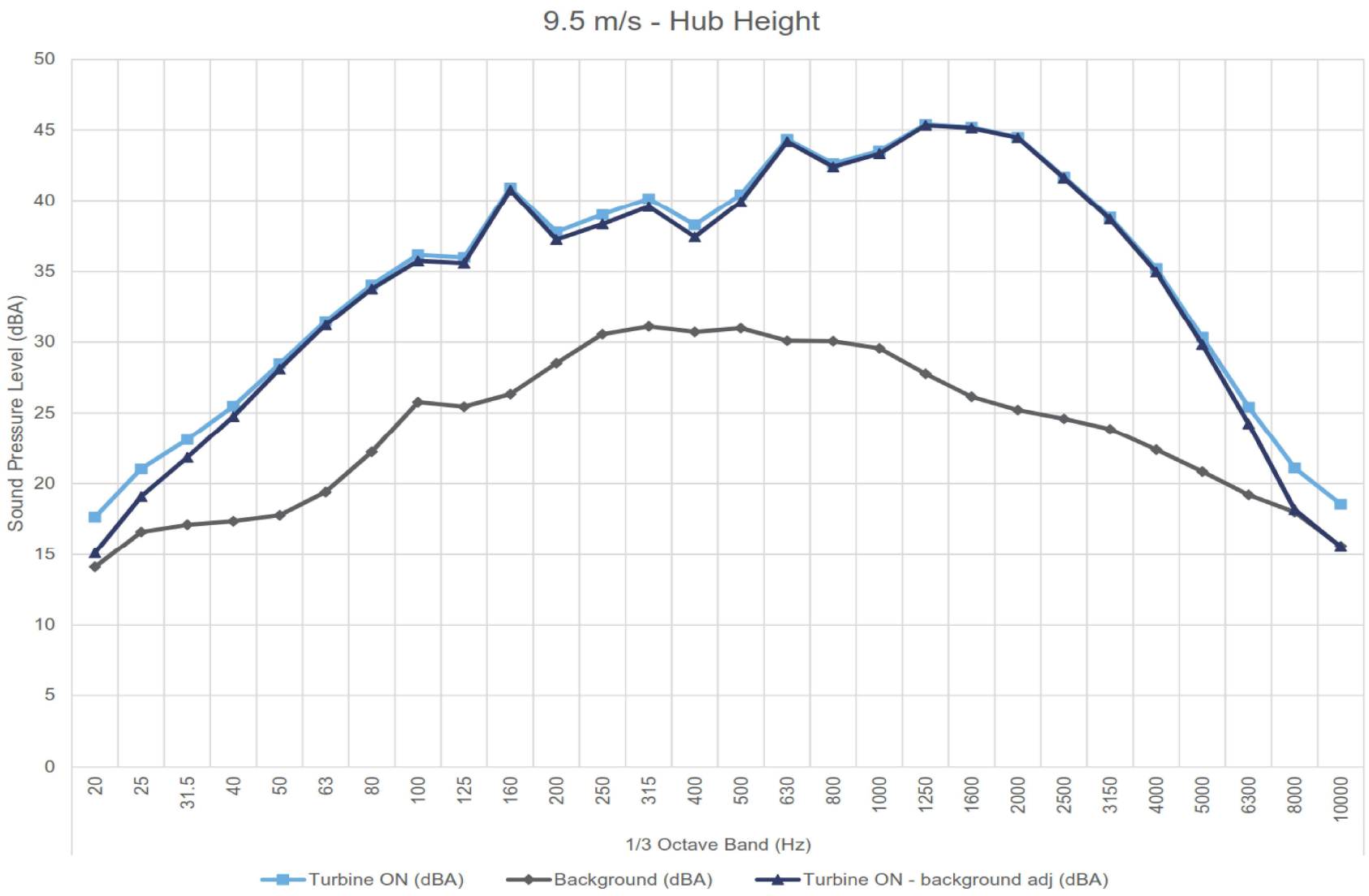

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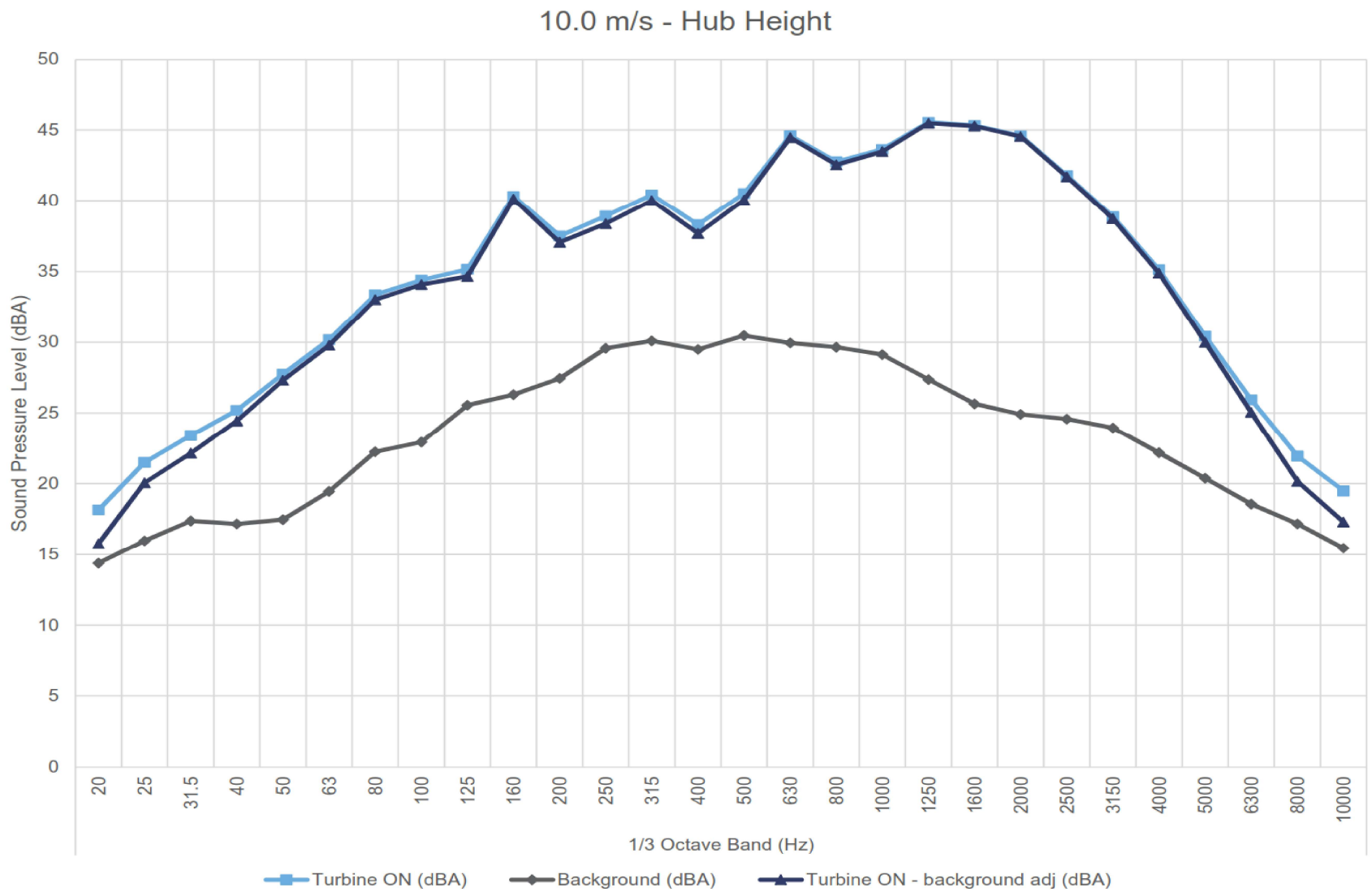
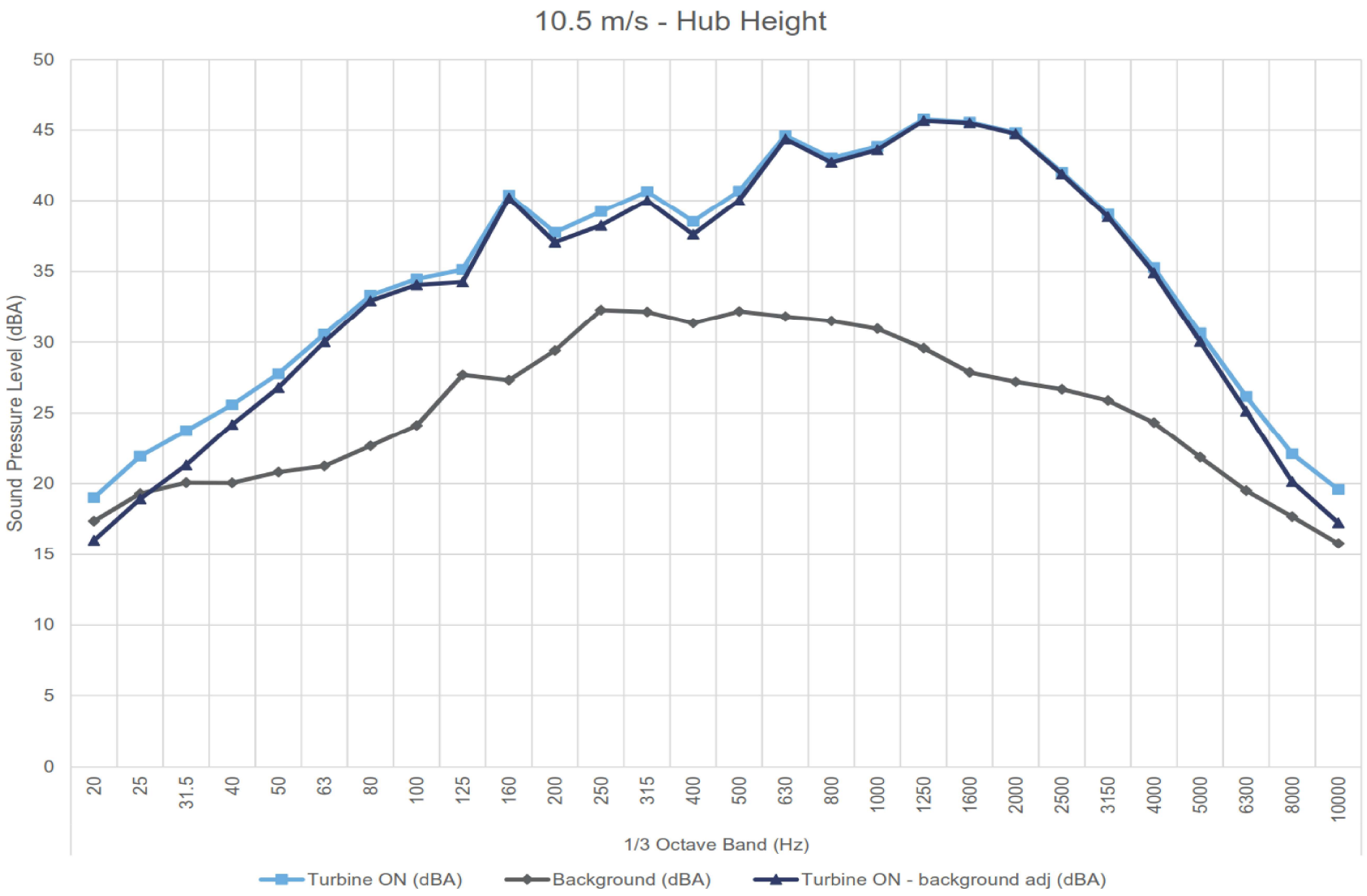
Figure C.10



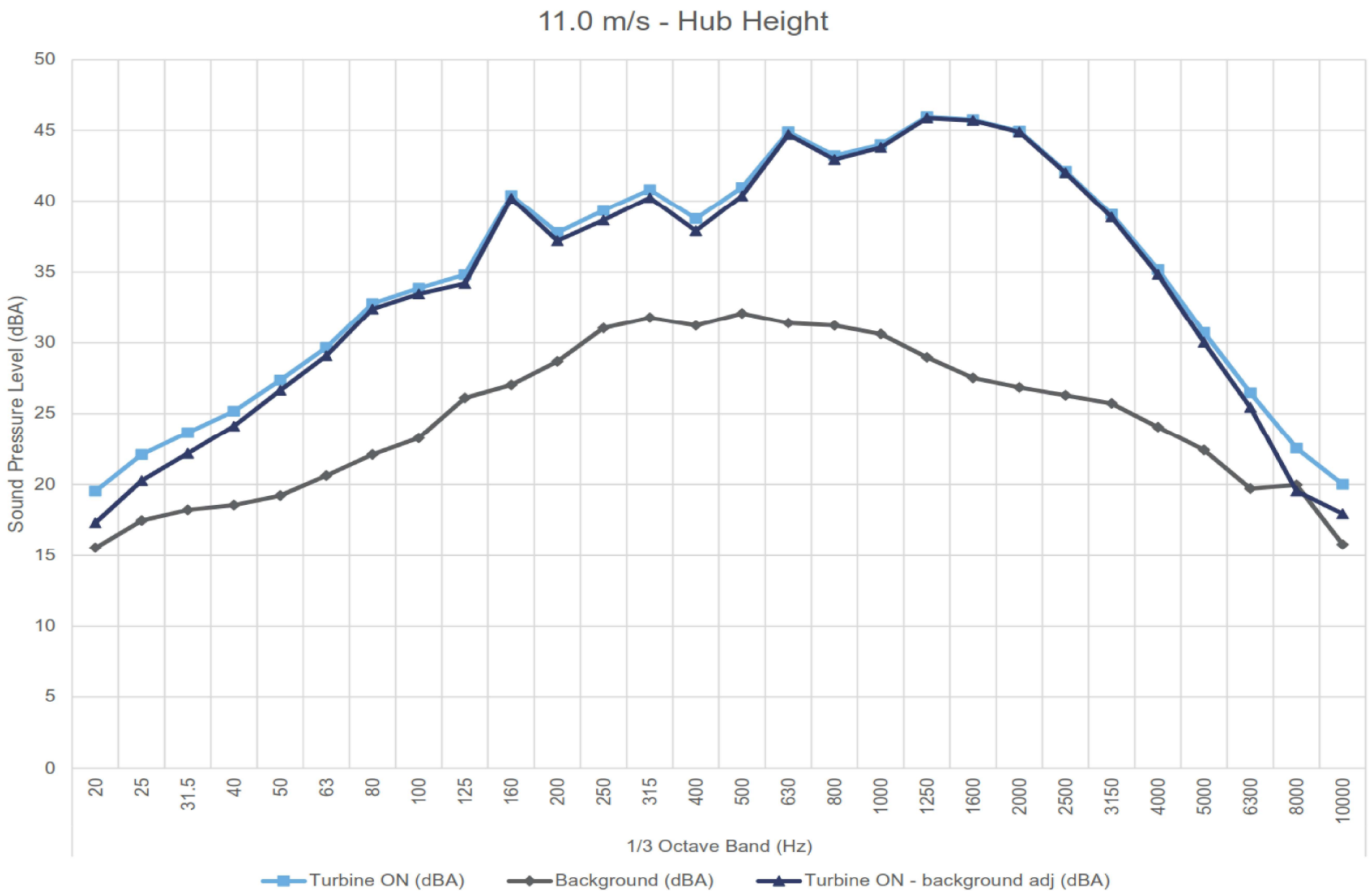
aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum at 1/3 Octave at 10m/s

Figure C.11



aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum at 1/3 Octave at 10.5m/s

Figure C.12



aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum at 1/3 Octave at 11m/s

Figure C.13

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

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/12/2017

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	
7.0	Turbine ON (dBA)	11.4	14.2	17.2	20.3	23.1	26.7	30.6	31.3	36.3	32.4	33.2	36.0	34.6	33.4	38.4	36.6	38.4	40.0	39.9	39.0	36.4	33.3	29.8	25.8	22.3	18.6	17.0	15.5	48.7
	Background (dBA)	11.1	13.0	13.3	14.7	15.1	16.9	19.7	21.0	23.4	23.0	23.2	24.8	25.1	25.2	26.4	25.9	26.1	25.2	22.7	20.5	19.4	18.7	18.5	18.9	18.8	17.8	17.7	15.4	36.4
	Turbine ON - background adj (dBA)	[8.4]	[11.2]	15.0	18.9	22.3	26.2	30.3	30.9	36.1	31.9	32.8	35.7	34.1	32.7	38.1	36.2	38.2	39.9	39.8	38.9	36.3	33.2	29.4	24.8	19.7	[15.6]	[14]	[12.5]	48.5
	Signal to noise (dB)	0.3	1.2	3.9	5.6	8.0	9.9	10.9	10.3	12.9	9.5	10.0	11.2	9.5	8.2	12.0	10.6	12.3	14.8	17.2	18.5	17.0	14.6	11.3	6.9	3.5	0.8	-0.6	0.1	12.3
	Uncertainty (dB)	2.5	2.5	1.5	1.2	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.7	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.9	1.0	1.6	1.8	1.8	3.2	0.8
	PWL (dBA)	[57.3]	[60.1]	63.8	67.7	71.2	75.1	79.1	79.7	84.9	80.8	81.6	84.5	83.0	81.6	87.0	85.0	87.0	88.7	88.6	87.8	85.2	82.0	78.3	73.6	68.6	[64.5]	[62.9]	[61.3]	97.3
7.5	Turbine ON (dBA)	12.8	15.9	18.8	21.9	24.5	27.9	31.4	32.2	40.7	37.0	34.4	37.0	36.1	34.7	38.8	38.3	39.7	41.6	41.6	40.5	38.4	35.3	31.6	27.3	23.0	19.6	17.7	15.6	50.5
	Background (dBA)	10.1	11.9	12.9	13.7	16.2	16.4	19.1	20.5	23.3	22.7	22.7	24.6	24.9	25.0	26.0	25.5	25.5	24.9	22.3	19.8	18.7	18.3	18.1	18.4	18.8	17.5	16.8	14.7	36.0
	Turbine ON - background adj (dBA)	[9.8]	13.7	17.5	21.2	23.8	27.6	31.2	31.9	40.7	36.9	34.1	36.8	35.7	34.2	38.5	38.0	39.5	41.5	41.6	40.5	38.3	35.2	31.4	26.7	20.9	[16.6]	[14.7]	[12.6]	50.3
	Signal to noise (dB)	2.8	4.0	5.9	8.2	8.4	11.5	12.4	11.6	17.4	14.3	11.7	12.5	11.2	9.7	12.8	12.7	14.1	16.7	19.3	20.7	19.7	17.0	13.5	8.9	4.2	2.1	0.8	0.9	14.5
	Uncertainty (dB)	2.4	1.9	1.1	1.0	1.0	0.9	0.8	0.9	0.8	0.9	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.4	1.8	1.8	3.2	0.7
	PWL (dBA)	[58.7]	62.6	66.4	70.1	72.7	76.4	80.0	80.7	89.5	85.7	82.9	85.6	84.6	83.0	87.4	86.9	88.4	90.3	90.4	89.3	87.2	84.0	80.3	75.6	69.7	[65.5]	[63.5]	[61.5]	99.2
8.0	Turbine ON (dBA)	13.7	16.8	19.8	22.9	25.8	28.9	32.4	33.1	39.9	40.7	35.3	37.5	37.5	35.7	38.9	39.9	40.7	41.8	43.1	41.7	39.9	36.9	33.4	29.3	24.4	20.4	17.9	15.6	51.6
	Background (dBA)	11.5	13.3	14.0	15.4	15.8	17.2	20.0	21.5	23.4	23.5	23.8	25.5	26.2	26.1	27.5	26.9	27.1	26.0	23.7	21.4	20.0	19.2	18.9	18.8	18.9	18.1	17.0	15.1	37.2
	Turbine ON - background adj (dBA)	[10.7]	14.2	18.5	22.1	25.4	28.6	32.1	32.8	39.8	40.6	35.0	37.3	37.1	35.1	38.6	39.7	40.5	41.7	43.0	41.7	39.8	36.8	33.2	28.9	22.9	[17.4]	[14.9]	[12.6]	51.4
	Signal to noise (dB)	2.2	3.5	5.9	7.6	10.0	11.7	12.4	11.7	16.5	17.2	11.5	12.1	11.2	9.5	11.3	13.0	13.6	15.9	19.4	20.4	19.9	17.6	14.5	10.5	5.5	2.3	0.9	0.5	14.4
	Uncertainty (dB)	2.4	2.0	1.1	1.0	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	0.6	0.6	0.6	0.8	0.8	0.8	1.1	1.7	1.7	3.0	0.7
	PWL (dBA)	[59.5]	63.1	67.4	71.0	74.2	77.5	81.0	81.7	88.7	89.5	83.9	86.1	86.0	84.0	87.4	88.5	89.4	90.6	91.9	90.6	88.7	85.7	82.1	77.8	71.8	[66.2]	[63.7]	[61.5]	100.3
8.5	Turbine ON (dBA)	15.3	18.5	21.6	24.3	27.4	30.1	33.3	34.2	39.4	40.5	36.3	38.2	38.4	36.6	39.1	40.7	41.2	42.1	43.7	42.8	41.5	38.7	35.7	31.8	27.0	22.3	18.9	16.7	52.3
	Background (dBA)	12.4	14.7	15.1	16.3	16.8	18.3	21.0	24.0	24.8	24.6	26.6	27.4	28.8	27.7	28.6	28.1	28.2	27.4	25.4	23.5	22.4	21.8	21.3	20.3	19.3	18.0	16.8	15.2	38.7
	Turbine ON - background adj (dBA)	[12.3]	16.2	20.5	23.6	27.0	29.8	33.0	33.8	39.2	40.4	35.8	37.8	37.9	36.0	38.7	40.5	40.9	41.9	43.6	42.8	41.4	38.6	35.5	31.5	26.2	20.3	[15.9]	[13.7]	52.1
	Signal to noise (dB)	2.9	3.8	6.5	8.0	10.6	11.8	12.3	10.2	14.6	15.9	9.7	10.8	9.7	8.9	10.5	12.7	13.0	14.7	18.3	19.3	19.1	16.9	14.4	11.5	7.7	4.3	2.0	1.6	13.5
	Uncertainty (dB)	2.6	2.1	1.1	1.0	0.9	0.9	0.9	0.9	1.0	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.9	0.9	1.0	1.2	1.5	1.9	3.3	0.8
	PWL (dBA)	[61.2]	65.1	69.3	72.4	75.9	78.7	81.9	82.7	88.1	89.3	84.7	86.6	86.8	84.9	87.6	89.3	89.8	90.8	92.5	91.6	90.3	87.5	84.3	80.4	75.0	69.2	[64.7]	[62.6]	100.9
9.0	Turbine ON (dBA)	17.8	20.8	23.4	25.7	28.9	31.4	34.5	35.6	38.5	40.2	37.6	38.9	39.8	38.1	40.0	42.8	42.0	42.9	44.6	44.3	43.5	40.9	38.2	34.7	30.1	25.2	20.9	18.7	53.5
	Background (dBA)	12.3	13.7	14.4	15.7	16.5	18.0	21.9	23.0	25.3	26.1	29.1	29.2	29.9	29.0	29.3	28.4	28.4	27.6	25.6	23.8	22.9	22.4	21.8	20.7	19.8	20.7	24.8	18.1	39.7
	Turbine ON - background adj (dBA)	16.3	19.8	22.8	25.3	28.6	31.2	34.2	35.3	38.3	40.0	36.9	38.4	39.3	37.6	39.7	42.6	41.8	42.8	44.6	44.2	43.4	40.8	38.1	34.5	29.7	23.3	[17.9]	[15.7]	53.3
	Signal to noise (dB)	5.5	7.1	9.0	10.1	12.4	13.4	12.5	12.5	13.2	14.1	8.5	9.6	9.9	9.2	10.8	14.3	13.6	15.3	19.0	20.5	20.6	18.5	16.3	14.0	10.3	4.5	-3.9	0.6	13.8
	Uncertainty (dB)	1.7	1.4	1.0	0.9	0.8	0.8	0.9	0.8	1.1	0.8	0.8	0.7	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.0	1.5	2.2	3.3	0.7
	PWL (dBA)	65.2	68.7	71.6	74.1	77.5	80.1	83.1	84.2	87.2	88.9	85.8	87.2	88.2	86.4	88.5	91.5	90.6	91.7	93.4	93.1	92.3	89.7	86.9	83.3	78.5	72.2	[66.8]	[64.6]	102.1
9.5	Turbine ON (dBA)	17.6	21.0	23.1	25.5	28.5	31.5	34.1	36.2	36.0	40.9	37.8	39.0	40.1	38.3	40.4	44.3	42.6	43.5	45.4	45.2	44.5	41.7	38.8	35.2	30.3	25.4	21.1	18.6	54.1
	Background (dBA)	14.1	16.6	17.1	17.4	17.8	19.4	22.2	25.8	25.4	26.3	28.5	30.6	31.1	30.7	31.0	30.1	30.1	29.5	27.8	26.1	25.2	24.6	23.8	22.4	20.8	19.2	18.0	15.6	41.0
	Turbine ON - background adj (dBA)	15.1	19.1	21.8	24.8	28.1	31.2	33.8	35.8	35.6	40.7	37.2	38.3	39.6	37.4	39.9	44.2	42.4	43.3	45.3	45.1	44.4	41.6	38.7	35.0	29.8	24.2	18.2	[15.6]	53.9
	Signal to noise (dB)	3.5	4.4	6.0	8.1	10.7	12.1	11.8	10.4	10.5	14.6	9.3	8.4	9.0	7.6	9.4	14.2	12.6	14.0	17.6	19.0	19.3	17.1	15.0	12.8	9.5	6.2	3.1	3.0	13.2
	Uncertainty (dB)	2.2	1.8	1.2	1.0	0.9	0.9	0.8	0.9	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	0.8	0.8	0.8	0.9	1.1	1.7	3.1	0.7
	PWL (dBA)	64.0	68.0	70.7	73.6	77.0	80.1	82.6	84.6	84.4	89.6	86.1	87.2	88.4	86.3	88.8	93.0	91.3	92.2	94.2	94.0	93.3	90.5	87.5	83.8	78.7	73.1	67.0	[64.4]	102.8
10.0	Turbine ON (dBA)	18.2	21.5	23.4	25.2	27.7	30.2	33.4	34.4	35.2	40.3	37.5	38.9	40.4	38.3	40.5	44.6	42.8	43.6	45.5	45.3	44.6	41.8	38.9	35.1	30.4	25.9	21.9	19.5	54.2
	Background (dBA)	14.4	16.0	17.4	17.2	17.5	19.5	22.2	22.9	25.5	26.3	27.4	29.6	30.1	29.5	30.5	29.9	29.6	29.1	27.4	25.6	24.9	24.6	23.9	22.2	20.4	18.6	17.2	15.5	40.4
	Turbine ON - background adj (dBA)	15.8	20.1	22.1	24.4	27.3	29.8	33.0	34.1	34.7	40.1	37.1	38.4	40.0	37.7	40.1	44.5	42.5	43.5	45.5	45.3	44.5	41.7	38.7	34.9	30.0	25.0	20.2	17.3	54.0
	Signal to noise (dB)	3.8	5.5	6.0	8.0	10.3	10.7	11.1	11.5	9.6	14.0	10.1	9.3	10.3	8.8	10.0	14.7	13.1	14.5	18.2	19.7	19.7	17.2	14.9	13.0	10.1	7.4	4.8	4.0	13.8
	Uncertainty (dB)	2.1	1.5	1.2	1.0	0.9	0.9	0.9	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	0.8	0.8	0.8	0.9	1.0	1.3	2.5	0.7
	PWL (dBA)	64.6	68.9	71.0	73.3	76.2	78.7	81.9	82.9	83.5	89.0	85.9	87.2	88.9	86.5	88.9	93.3	91.4	92.3	94.3	94.1	93.4	90.6	87.6	83.8	78.8	73.9	69.0	66.2	102.8
10.5	Turbine ON (dBA)	19.0	21.9	23.7	25.6	27.8	30.6	33.3	34.5	35.1	40.4	37.7	39.2	40.7	38.5	40.7	44.6	43.0	43.8	45.8	45.6	44.8	42.0	39.0	35.3	30.7	26.2	22.1	19.6	54.4
	Background (dBA)	17.4	19.3	20.1	20.0	20.8	21.2	22.6	24.1	27.7	27.3	29.4	32.3	32.2	31.4	32.2	31.8	31.5	31.0	29.6	27.9	27.2	26.7	25.9	24.3	21.9	19.5	17.7	15.8	42.3
	Turbine ON - background adj (dBA)	[16]	[18.9]	21.3	24.2	26.8	30.0	32.9	34.1	34.3	40.2	37.1	38.2	40.0	37.6	40.0	44.4	42.7	43.6	45.6	45.5	44.7	41.9	38.8	34.9	30.0	25.1	20.1	17.2	54.1
	Signal to noise (dB)	1.7	2.6	3.7	5.5	7.0	9.3	10.7	10.4	7.4	13.1	8.3	6.9	8.5	7.2	8.5	12.8	11.5	12.9	16.2	17.7	17.6	15.4	13.2	11.0	8.8	6.7	4.4	3.8	12.0
	Uncertainty (dB)	2.8	2.6	1.9	1.2	1.0	0.9	0.9	0.9	1.0	0.8	0.8	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.9	1.0	1.3	2.6	0.7
	PWL (dBA)	[64.9]	[67.8]	70.2	73.0	75.6	78.9	81.8	82.9	83.1	89.0	85.9	87.1	88.9	86.5	88.9	93.2	91.6	92.5	94.5	94.3	93.6	90.8	87.7	83.8	78.9	74.0	69.0	66.1	102.9

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

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/12/2017

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	
11.0	Turbine ON (dBA)	19.5	22.1	23.6	25.2	27.4	29.7	32.8	33.9	34.8	40.4	37.8	39.3	40.8	38.7	41.0	44.9	43.2	44.0	45.9	45.7	44.9	42.1	39.1	35.2	30.7	26.5	22.5	20.0	54.5
	Background (dBA)	15.5	17.5	18.2	18.6	19.2	20.6	22.1	23.3	26.1	27.0	28.7	31.0	31.8	31.2	32.1	31.4	31.2	30.6	29.0	27.5	26.9	26.3	25.7	24.0	22.4	19.7	20.0	15.8	41.9
	Turbine ON - background adj (dBA)	17.3	20.3	22.2	24.1	26.6	29.1	32.4	33.5	34.2	40.2	37.2	38.6	40.2	37.9	40.4	44.7	42.9	43.8	45.9	45.7	44.9	42.0	38.8	34.8	30.0	25.4	[19.5]	17.9	54.3
	Signal to noise (dB)	4.0	4.6	5.4	6.6	8.1	9.0	10.7	10.6	8.7	13.4	9.1	8.3	9.0	7.5	8.9	13.5	12.0	13.4	17.0	18.2	18.1	15.8	13.3	11.1	8.3	6.8	2.6	4.2	12.6
	Uncertainty (dB)	2.2	1.8	1.4	1.1	0.9	0.9	0.8	0.8	0.9	0.8	0.7	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.8	0.8	0.8	0.9	1.0	1.9	2.3	0.7
	PWL (dBA)	66.2	69.1	71.0	73.0	75.5	77.9	81.3	82.3	83.1	89.0	86.0	87.5	89.1	86.7	89.2	93.5	91.8	92.7	94.7	94.5	93.7	90.8	87.7	83.7	78.9	74.3	[68.4]	66.8	103.1

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

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/12/2017

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)	11.5	14.4	17.4	20.5	23.2	26.8	30.8	31.5	37.3	33.7	33.3	35.8	34.7	33.8	38.5	36.7	38.5	40.0	40.1	39.1	36.6	33.5	29.9	25.8	21.9	18.6	17.1	15.4	48.9
	Background (dBA)	9.7	11.9	12.6	13.8	14.9	16.4	19.4	21.0	23.1	22.5	22.5	24.2	24.4	24.5	25.7	25.1	25.2	24.6	21.9	19.4	18.3	17.8	17.7	18.6	19.0	18.2	17.3	14.8	35.8
	Turbine ON - background adj (dBA)	[8.5]	[11.4]	15.6	19.4	22.5	26.3	30.5	31.1	37.1	33.3	32.9	35.5	34.3	33.2	38.3	36.4	38.2	39.9	40.0	39.1	36.5	33.3	29.6	24.8	[18.9]	[15.6]	[14.1]	[12.4]	48.7
	Signal to noise (dB)	1.8	2.5	4.7	6.7	8.3	10.4	11.4	10.5	14.2	11.2	10.8	11.7	10.3	9.2	12.8	11.6	13.2	15.4	18.2	19.7	18.2	15.7	12.2	7.1	2.9	0.5	-0.2	0.6	13.1
	Uncertainty (dB)	2.3	2.3	1.3	1.0	0.9	0.9	0.8	0.9	0.8	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	1.0	1.8	1.8	1.8	3.1	0.7
	PWL (dBA)	[57.4]	[60.2]	64.5	68.3	71.3	75.2	79.3	80.0	86.0	82.2	81.8	84.4	83.2	82.1	87.1	85.2	87.1	88.7	88.9	88.0	85.3	82.2	78.5	73.7	[67.8]	[64.5]	[63]	[61.3]	97.6
6.0	Turbine ON (dBA)	15.2	18.2	21.1	23.8	26.8	29.7	32.9	33.8	39.3	40.4	36.0	38.0	38.2	36.4	39.3	40.9	41.1	42.2	43.6	42.6	41.1	38.3	35.1	31.2	26.5	22.1	18.9	16.7	52.1
	Background (dBA)	11.8	13.9	14.4	15.8	16.8	17.8	20.7	22.8	24.4	24.5	25.6	27.0	28.0	27.3	28.2	27.6	27.8	26.9	24.8	22.7	21.6	21.0	20.5	19.7	19.1	18.0	16.8	15.1	38.2
	Turbine ON - background adj (dBA)	12.5	16.2	20.0	23.1	26.3	29.4	32.6	33.5	39.2	40.3	35.6	37.6	37.8	35.9	38.9	40.6	40.9	42.1	43.5	42.5	41.1	38.2	34.9	30.9	25.6	19.9	[15.9]	[13.7]	51.9
	Signal to noise (dB)	3.3	4.3	6.7	8.0	10.0	11.9	12.1	11.0	15.0	16.0	10.4	11.0	10.2	9.1	11.0	13.2	13.3	15.3	18.8	19.9	19.5	17.3	14.6	11.5	7.3	4.1	2.0	1.6	13.9
	Uncertainty (dB)	2.0	1.6	1.0	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	0.6	0.6	0.6	0.6	0.7	0.8	0.8	0.9	1.3	1.7	3.0	0.7
	PWL (dBA)	61.3	65.0	68.9	71.9	75.2	78.2	81.5	82.3	88.0	89.2	84.4	86.4	86.6	84.7	87.8	89.5	89.7	90.9	92.4	91.4	90.0	87.1	83.8	79.8	74.4	68.8	[64.7]	[62.5]	100.8
7.0	Turbine ON (dBA)	18.1	21.3	23.3	25.4	28.0	30.8	33.6	35.1	35.7	40.5	37.5	38.9	40.2	38.2	40.4	44.2	42.6	43.5	45.4	45.1	44.3	41.5	38.6	34.9	30.2	25.5	21.5	19.0	54.0
	Background (dBA)	14.5	16.4	17.4	17.5	18.0	19.5	22.3	24.7	26.1	26.5	29.2	30.6	31.0	30.3	30.8	30.1	29.9	29.4	27.6	26.0	25.2	24.7	24.0	22.4	20.8	20.2	22.5	17.1	41.0
	Turbine ON - background adj (dBA)	15.6	19.6	22.0	24.6	27.5	30.4	33.3	34.7	35.2	40.4	36.9	38.2	39.6	37.4	39.9	44.1	42.4	43.3	45.3	45.0	44.3	41.4	38.5	34.7	29.6	24.1	[18.5]	[16]	53.8
	Signal to noise (dB)	3.6	4.9	6.0	7.9	10.0	11.3	11.3	10.4	9.7	14.0	8.4	8.3	9.2	7.9	9.6	14.1	12.7	14.1	17.7	19.1	19.2	16.8	14.7	12.5	9.4	5.4	-1.0	2.0	13.0
	Uncertainty (dB)	2.0	1.6	1.1	0.9	0.9	0.8	0.8	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	0.8	0.8	0.8	0.9	1.1	1.8	3.1	0.7
	PWL (dBA)	64.4	68.4	70.9	73.4	76.4	79.3	82.2	83.5	84.1	89.2	85.7	87.1	88.5	86.3	88.8	92.9	91.2	92.2	94.2	93.9	93.1	90.3	87.3	83.5	78.5	72.9	[67.4]	[64.9]	102.7
8.0	Turbine ON (dBA)	19.3	22.5	23.9	25.3	27.6	29.9	32.9	34.0	34.9	40.4	37.8	39.5	40.9	38.8	41.0	45.0	43.3	44.1	46.0	45.8	45.0	42.2	39.1	35.3	30.9	26.6	22.7	20.2	54.6
	Background (dBA)	16.8	18.6	18.9	19.4	19.9	20.9	22.3	23.4	26.3	27.2	28.8	31.5	31.9	31.3	32.2	31.6	31.4	30.8	29.3	27.8	27.1	26.5	25.8	24.2	22.0	19.6	18.6	15.8	42.1
	Turbine ON - background adj (dBA)	[16.3]	20.2	22.2	24.1	26.8	29.3	32.5	33.6	34.2	40.1	37.2	38.7	40.3	38.0	40.4	44.8	43.0	43.9	46.0	45.8	44.9	42.1	38.9	34.9	30.3	25.7	20.5	18.2	54.3
	Signal to noise (dB)	2.5	3.9	5.0	6.0	7.7	9.0	10.6	10.7	8.6	13.2	8.9	7.9	9.0	7.5	8.8	13.4	11.9	13.3	16.7	18.0	17.9	15.7	13.3	11.1	8.9	7.0	4.0	4.4	12.5
	Uncertainty (dB)	2.4	1.8	1.3	1.1	0.9	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.9	1.3	2.2	0.7
	PWL (dBA)	[65.2]	69.1	71.1	72.9	75.6	78.2	81.3	82.5	83.1	89.0	86.0	87.6	89.2	86.8	89.3	93.7	91.9	92.7	94.8	94.6	93.8	90.9	87.8	83.8	79.1	74.5	69.3	67.1	103.2

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 measurement uncertainty at hub height

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 11/6/2017

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	
7.0	Turbine ON	6.99	118	Average (dBA)	11.4	14.2	17.2	20.3	23.0	26.7	30.6	31.3	36.2	32.4	33.2	36.0	34.6	33.4	38.4	36.5	38.4	40.0	39.8	38.9	36.4	33.3	29.8	25.7	22.3	18.6	17.0	15.5	48.7
				Uncertainty A (dB)	0.3	0.2	0.2	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	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1		
				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)	1.1	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		
	Background	7.01	59	Average (dBA)	11.2	13.1	13.4	14.7	15.1	16.9	19.7	21.0	23.4	23.0	23.2	24.9	25.2	25.2	26.5	26.0	26.2	25.2	22.7	20.5	19.4	18.8	18.6	18.9	18.7	17.8	17.7	15.4	36.4
				Uncertainty A (dB)	0.9	0.9	0.7	0.6	0.5	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.4	0.5	0.6	0.5	0.5	0.4	0.4	0.3	0.2	0.3	0.2		
				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)	1.4	1.4	1.1	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.9	1.5			
7.5	Turbine ON	7.49	106	Average (dBA)	12.8	15.9	18.8	21.9	24.5	27.9	31.4	32.2	40.8	36.9	34.4	37.0	36.0	34.6	38.8	38.3	39.7	41.6	41.6	40.5	38.4	35.2	31.6	27.3	22.9	19.6	17.7	15.6	50.5
				Uncertainty A (dB)	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.3	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	0.2	0.2	0.2	0.1		
				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)	1.1	1.1	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		
	Background	7.51	66	Average (dBA)	10.0	11.9	12.9	13.7	16.2	16.4	19.0	20.5	23.3	22.7	22.7	24.5	24.8	25.0	26.0	25.5	25.5	24.9	22.3	19.8	18.7	18.3	18.1	18.4	18.8	17.5	16.8	14.7	36.0
				Uncertainty A (dB)	0.7	0.7	0.6	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.1		
				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	1.2	1.0	0.9	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.8	0.8	1.4		
8.0	Turbine ON	7.95	61	Average (dBA)	13.5	16.6	19.7	22.8	25.7	28.8	32.3	33.0	40.0	40.7	35.2	37.5	37.4	35.6	38.9	39.8	40.6	41.8	43.0	41.6	39.7	36.7	33.1	29.0	24.1	20.2	17.8	15.5	51.5
				Uncertainty A (dB)	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2		
				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)	1.1	1.1	0.9	0.8	0.8	0.8	0.8	0.8	0.9	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	1.5		
	Background	8.02	60	Average (dBA)	11.5	13.3	14.0	15.4	15.8	17.2	20.0	21.5	23.5	23.6	23.8	25.5	26.3	26.2	27.6	27.0	27.2	26.0	23.8	21.4	20.1	19.3	18.9	18.8	18.9	18.1	17.0	15.2	37.2
				Uncertainty A (dB)	0.8	0.8	0.7	0.6	0.5	0.3	0.3	0.4	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.6	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.2		
				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)	1.3	1.3	1.1	1.0	0.9	0.9	0.9	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	1.5		
8.5	Turbine ON	8.50	34	Average (dBA)	15.3	18.5	21.6	24.3	27.4	30.1	33.3	34.2	39.4	40.5	36.3	38.2	38.4	36.6	39.1	40.7	41.1	42.1	43.7	42.8	41.5	38.7	35.6	31.8	27.0	22.3	18.8	16.7	52.3
				Uncertainty A (dB)	0.5	0.4	0.3	0.2	0.2	0.3	0.2	0.2	0.6	0.3	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.5	0.5	0.3	0.3		
				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)	1.1	1.1	0.9	0.8	0.8	0.8	0.8	0.8	1.0	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.9	0.9	0.9	1.0	0.9	0.9	1.5		
	Background	8.50	80	Average (dBA)	12.4	14.7	15.1	16.3	16.8	18.4	21.0	24.0	24.8	24.6	26.6	27.4	28.8	27.7	28.6	28.1	28.2	27.4	25.4	23.5	22.5	21.8	21.3	20.3	19.3	18.0	16.8	15.2	38.8
				Uncertainty A (dB)	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.5	0.3	0.3	0.5	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.5	0.4	0.3	0.2	0.1	0.1		
				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	1.2	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	0.9	0.9	0.8	0.8	0.8	1.4		
9.0	Turbine ON	8.95	17	Average (dBA)	17.8	20.8	23.4	25.8	28.9	31.4	34.5	35.5	38.8	40.1	37.6	38.8	39.8	38.1	40.0	42.6	41.9	42.9	44.6	44.2	43.4	40.8	38.1	34.6	30.1	25.2	20.9	18.7	53.4
				Uncertainty A (dB)	0.8	0.6	0.5	0.4	0.3	0.3	0.4	0.3	0.8	0.3	0.2	0.2	0.3	0.3	0.2	0.4	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.5	0.5	0.6		
				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	1.0	0.9	0.9	0.9	0.9	0.9	1.1	0.9	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.6		
	Background	9.00	62	Average (dBA)	12.3	13.7	14.4	15.7	16.5	18.0	21.9	23.0	25.3	26.1	29.1	29.3	29.9	29.0	29.3	28.4	28.4	27.6	25.6	23.8	22.9	22.4	21.8	20.7	19.8	20.8	24.9	18.1	39.7
				Uncertainty A (dB)	0.9	0.8	0.7	0.6	0.5	0.4	0.5	0.5	0.3	0.4	0.8	0.6	0.7	0.7	0.6	0.6	0.6	0.5	0.6	0.7	0.7	0.7	0.6	0.5	0.4	0.5	1.1	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)	1.3	1.3	1.1	1.0	0.9	0.9	0.9	0.9	0.9	0.9	1.0	0.9	1.0	1.0	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.0	0.9	0.9	1.0	1.4	1.5		
9.5	Turbine ON	9.53	60	Average (dBA)	17.6	21.0	23.1	25.5	28.5	31.5	34.0	36.2	35.8	40.9	37.8	39.0	40.2	38.3	40.4	44.4	42.7	43.5	45.4	45.2	44.5	41.7	38.9	35.2	30.4	25.4	21.1	18.6	54.2
				Uncertainty A (dB)	0.4	0.3	0.3	0.3	0.2	0.3	0.2	0.3	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	0.2	0.2	0.3		
				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)	1.1	1.1	0.9	0.8	0.8	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	0.8	1.5		
	Background	9.51	54	Average (dBA)	14.1	16.7	17.2	17.4	17.8	19.4	22.2	25.8	25.4	26.3	28.5	30.6	31.1	30.7	31.0	30.1	30.1	29.6	27.8	26.2	25.2	24.6	23.9	22.4	20.9	19.2	17.9	15.6	41.0
				Uncertainty A (dB)	0.8	0.9	0.8	0.7	0.5	0.4	0.4	0.7	0.3	0.4	0.6	0.6	0.6	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.5	0.4	0.3	0.3	0.2		
				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)	1.3	1.4	1.1	1.0	0.9	0.9	0.9	1.0	0.9	0.9	0.9	0.9	0.9	1.0	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.0	0.9	0.9	0.9	0.9	1.5		
10.0	Turbine ON	9.98	71	Average (dBA)	18.1	21.5	23.4	25.2	27.7	30.2	33.4	34.4	35.2	40.3	37.5	38.9	40.4	38.3	40.5	44.6	42.8	43.6	45.5	45.3	44.6	41.8	38.9	35.1	30.4	25.9	21.9	19.5	54.2
				Uncertainty A (dB)	0.4	0.3	0.3	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	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3		
				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)	1.1	1.1	0.9	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	1.5		
	Background	10.00	40	Average (dBA)	14.4	16.0	17.4	17.2	17.5	19.5	22.2	22.9	25.5	26.3	27.4	29.6	30.1	29.5	30.5	29.9	29.6	29.1	27.4	25.6	24.9	24.6	23.9	22.2	20.4	18.6	17.2	15.5	40.4
				Uncertainty A (dB)	1.0	1.0	1.0	0.8	0.5	0.5	0.4	0.4	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.8	0.8	0.8	0.8	0.6	0.4	0.2	0.2	0.2		
				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)	1.4	1.4	1.3	1.1	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.1	1.2	1.1	1.0	0.9	0.8	0.8	1.5		

Table C.04 Detailed measurement uncertainty at hub height

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 11/6/2017

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	
10.5	Turbine ON	10.48	53	Average (dBA)	19.0	21.9	23.7	25.6	27.8	30.6	33.4	34.5	35.2	40.4	37.7	39.2	40.7	38.5	40.7	44.6	43.0	43.8	45.7	45.5	44.8	42.0	39.0	35.3	30.7	26.2	22.1	19.6	54.4
				Uncertainty A (dB)	0.6	0.4	0.4	0.3	0.2	0.3	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	0.3	0.3	
				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	1.1	0.9	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	0.8	1.5		
	Background	10.49	35	Average (dBA)	17.4	19.4	20.1	20.1	20.9	21.3	22.7	24.1	27.7	27.3	29.4	32.3	32.2	31.4	32.2	31.8	31.5	31.0	29.6	27.9	27.2	26.7	25.9	24.3	21.8	19.5	17.6	15.8	42.3
				Uncertainty A (dB)	1.3	1.3	1.3	1.0	0.8	0.5	0.4	0.4	0.5	0.3	0.5	0.7	0.6	0.5	0.5	0.6	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.3	0.2		
				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)	1.6	1.6	1.5	1.3	1.1	0.9	0.9	0.9	1.0	0.9	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9	1.0	1.0	1.0	0.9	0.9	0.8	1.5		
11.0	Turbine ON	10.95	25	Average (dBA)	19.5	22.0	23.6	25.2	27.4	29.7	32.8	33.9	34.9	40.4	37.8	39.3	40.8	38.7	40.9	44.9	43.2	44.0	45.9	45.7	44.9	42.1	39.0	35.2	30.7	26.4	22.5	20.0	54.5
				Uncertainty A (dB)	0.8	0.6	0.6	0.5	0.3	0.3	0.3	0.2	0.2	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	0.2	0.3	0.4		
				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)	1.3	1.2	1.0	0.9	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	0.8	0.8	0.8	0.9	1.5		
	Background	10.95	20	Average (dBA)	15.4	17.4	18.2	18.4	19.2	20.6	22.1	23.3	26.1	27.0	28.7	31.0	31.8	31.2	32.1	31.4	31.2	30.6	28.9	27.5	26.8	26.3	25.7	24.1	22.5	19.7	20.2	15.8	41.8
				Uncertainty A (dB)	1.3	1.3	1.3	1.0	0.8	0.6	0.5	0.4	0.4	0.5	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.7	0.8	0.9	0.9	0.8	0.8	0.7	0.5	0.9	0.3		
				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)	1.7	1.7	1.5	1.3	1.1	1.0	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	1.0	1.1	1.1	1.2	1.1	1.1	1.1	0.9	1.2	1.5		

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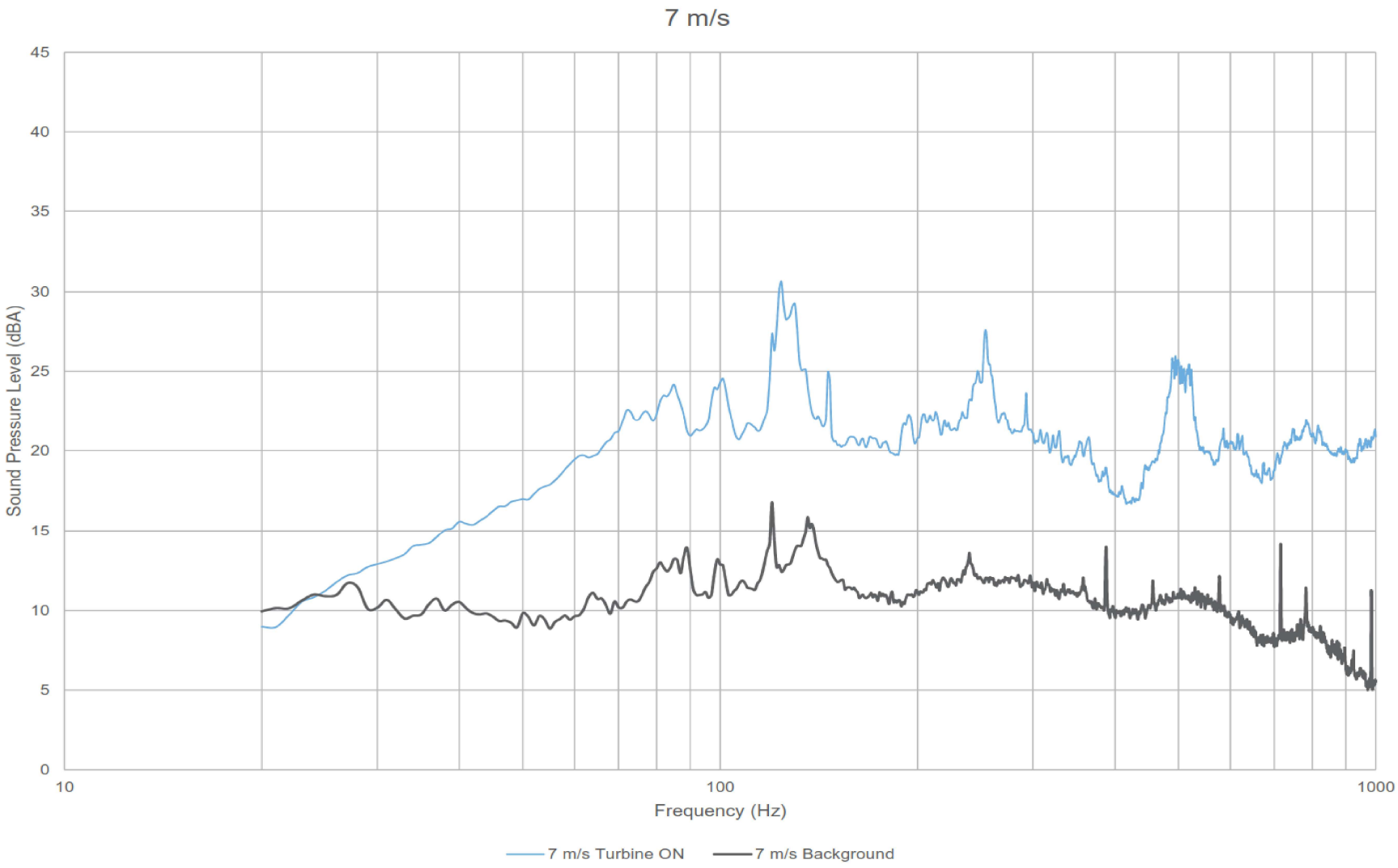
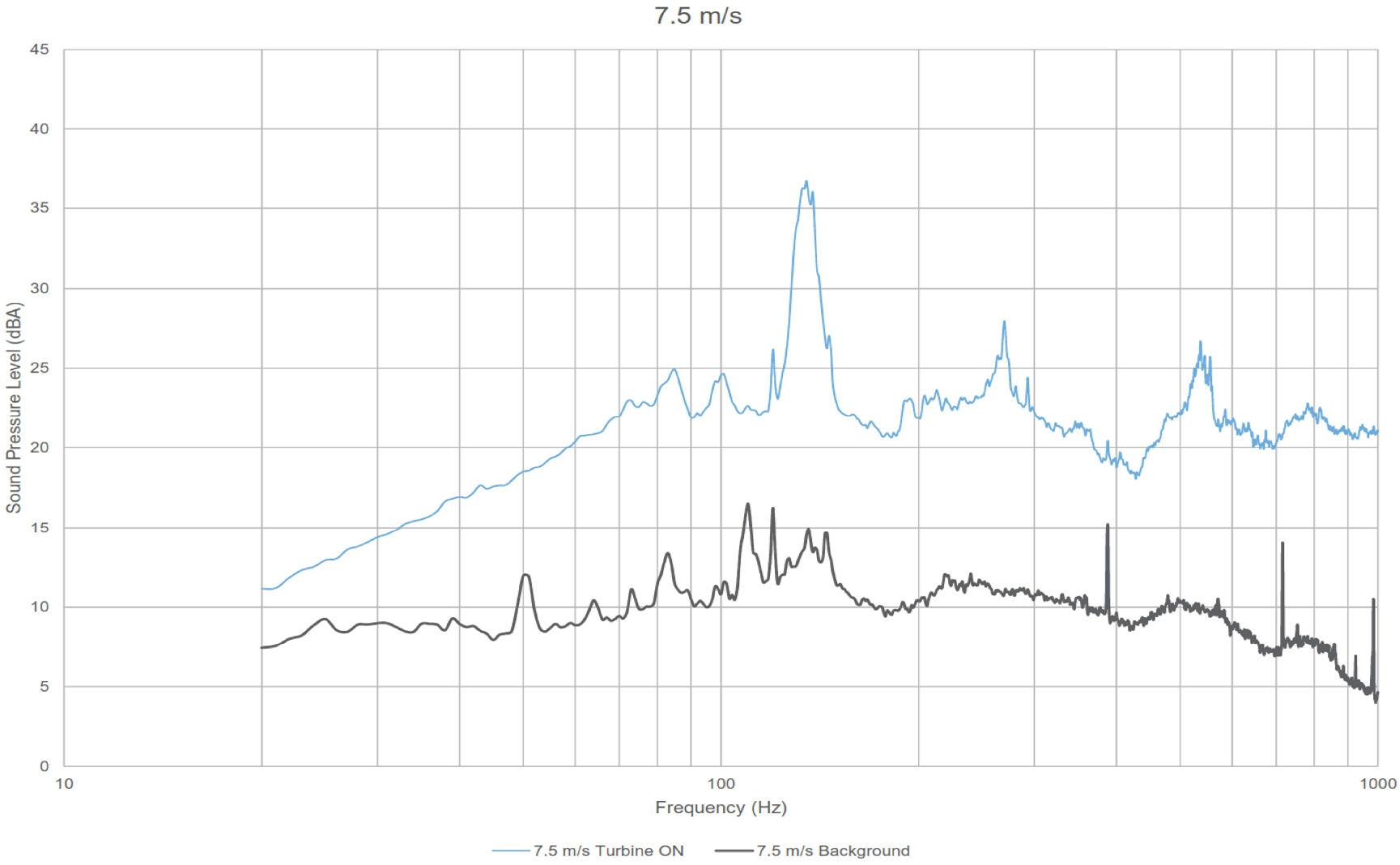
Appendix D
Tonality Assessment



aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs Background at 7 m/s

Figure D.01



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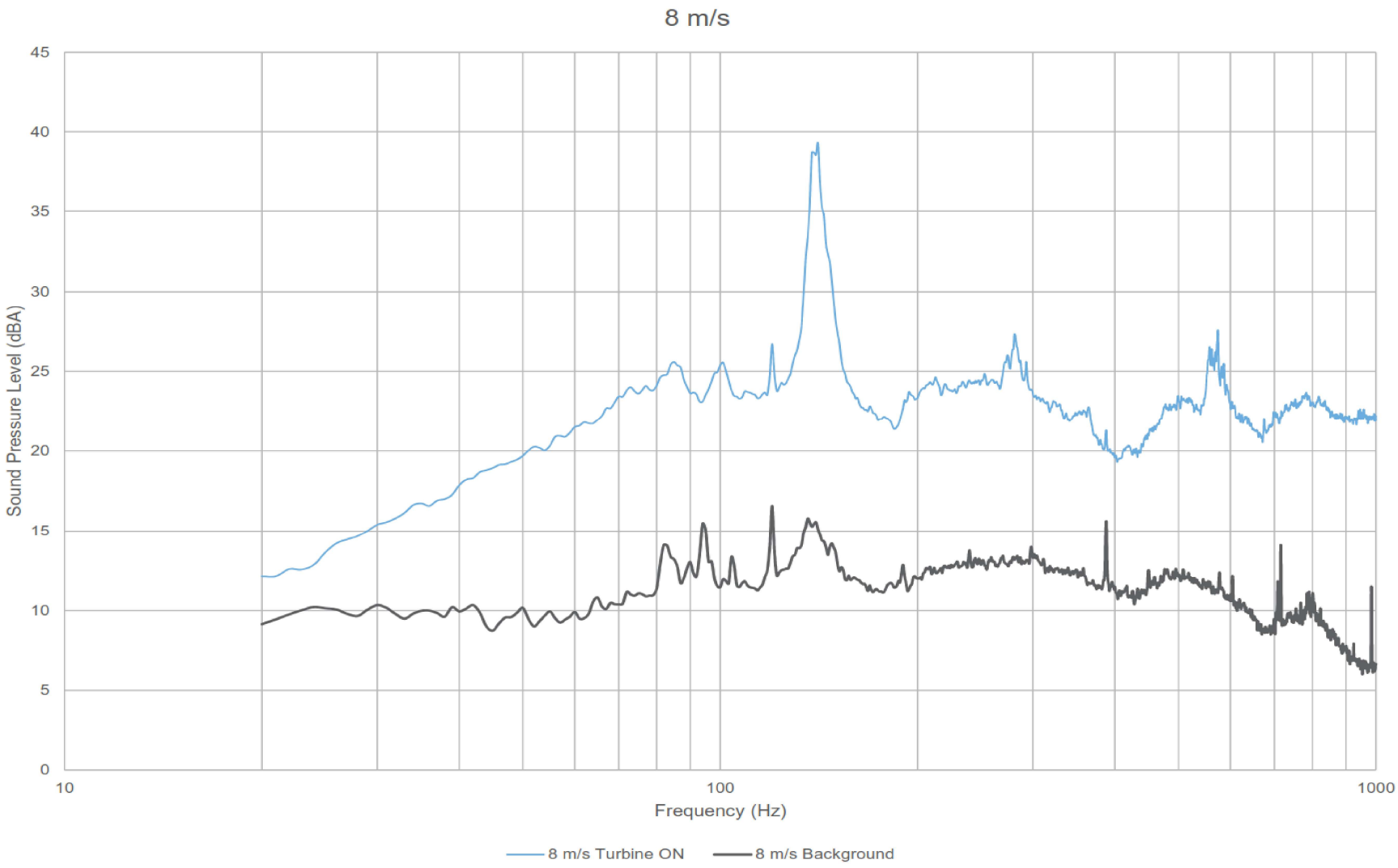
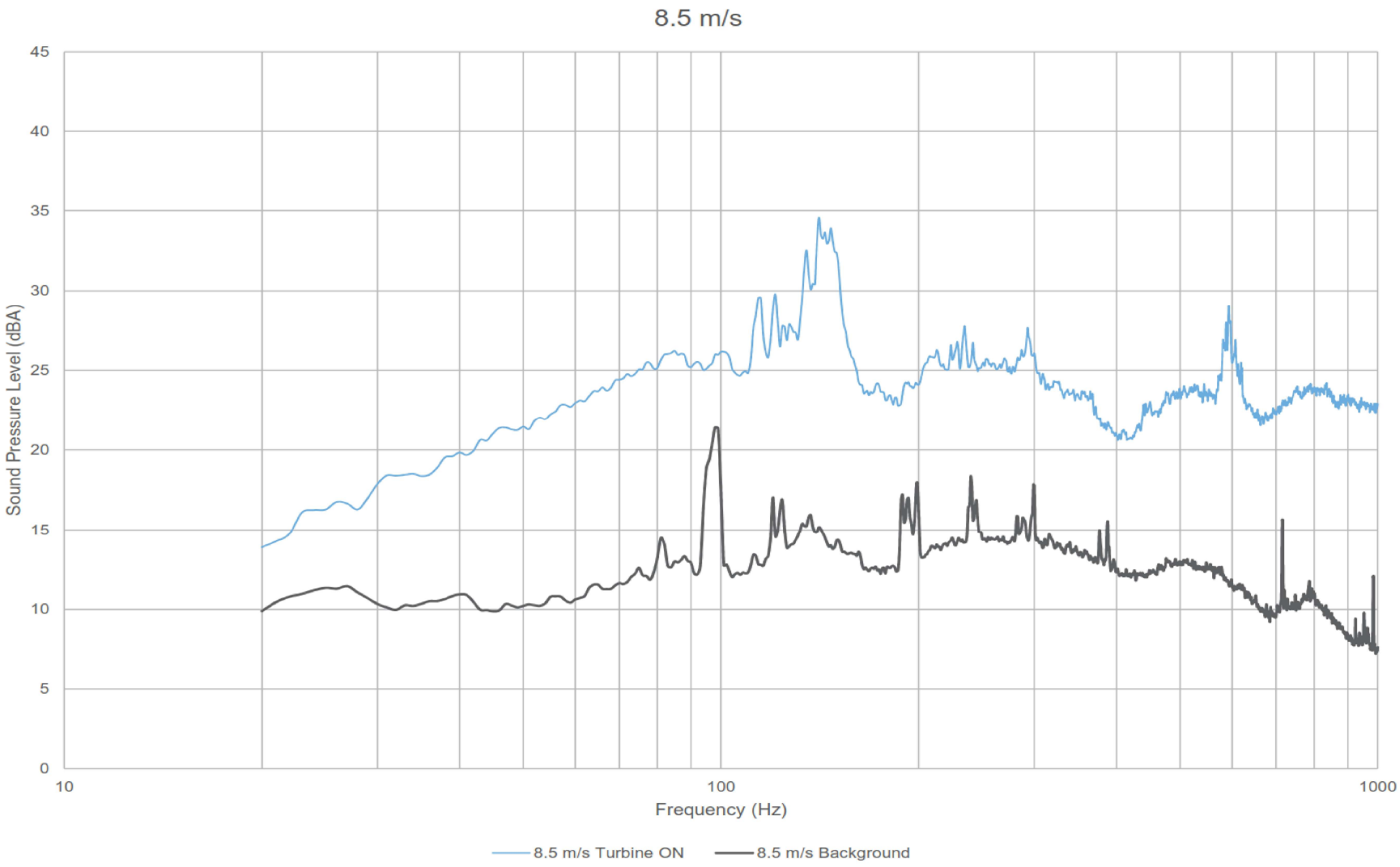
14462.00.T80.RP5	**Project Name**
Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0
	Figure Title Plot of narrow band spectra - Turbine ON vs Background at 7.5 m/s

Figure D.02



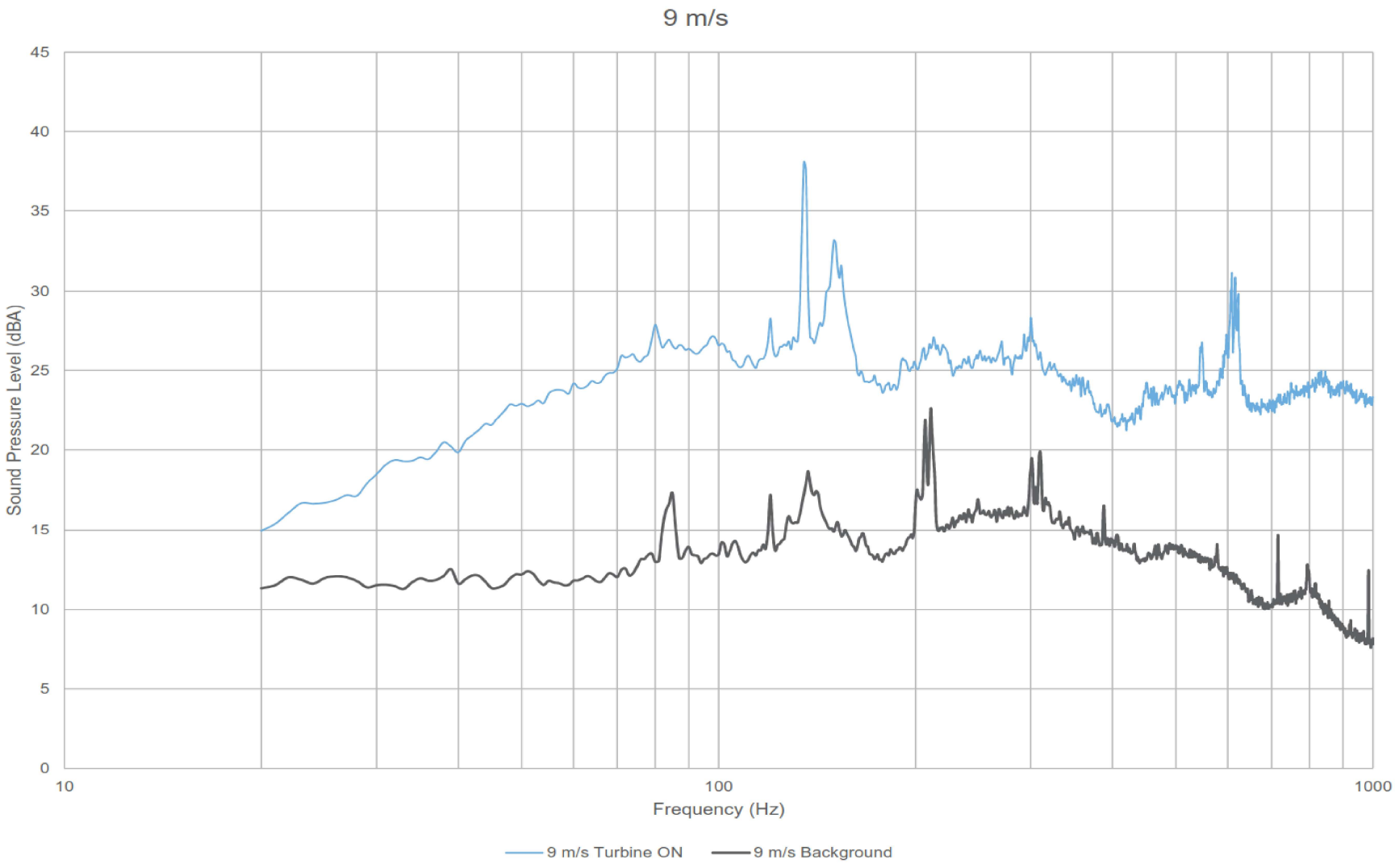
aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs Background at 8 m/s

Figure D.03



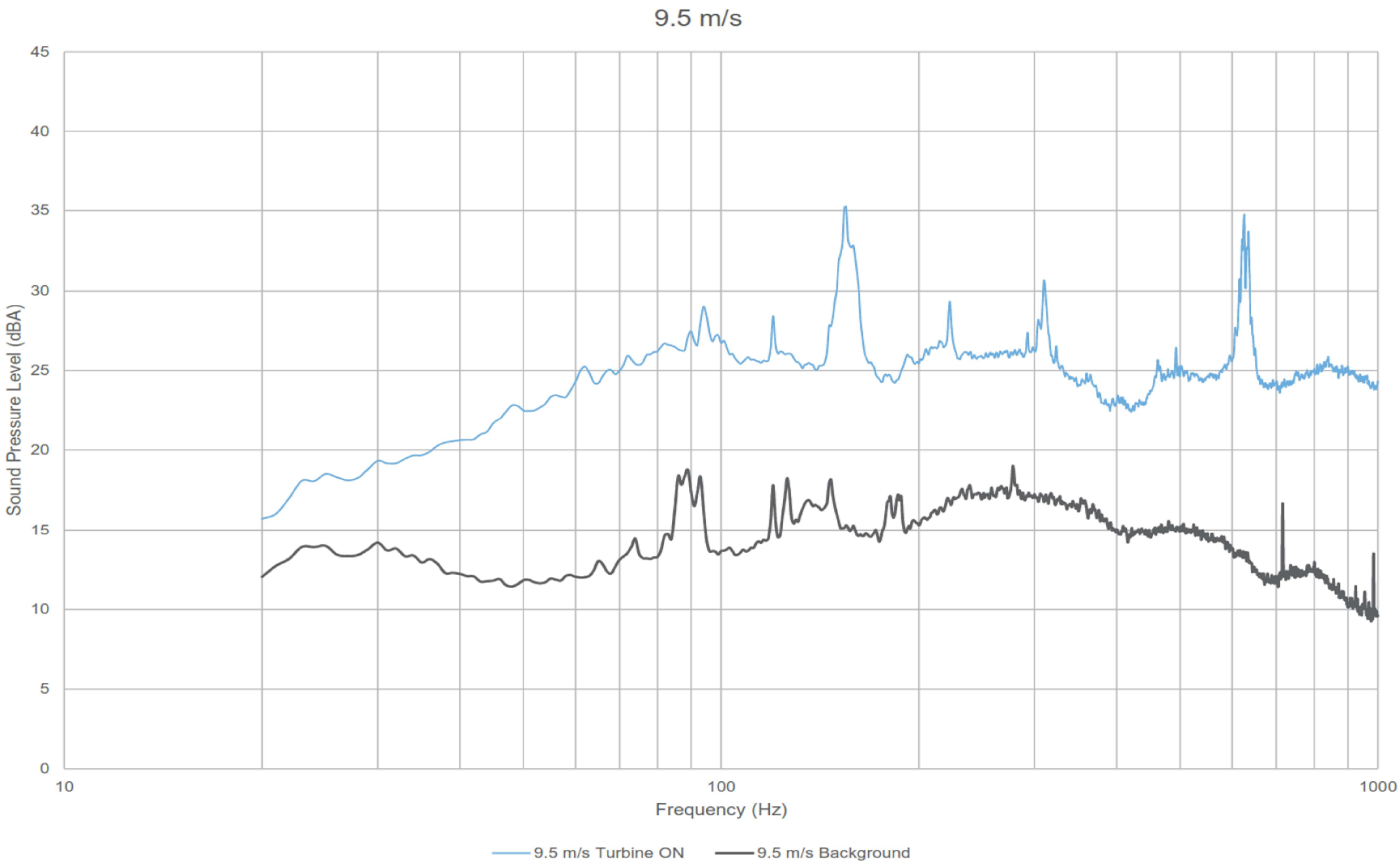
aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs Background at 8.5 m/s

Figure D.04



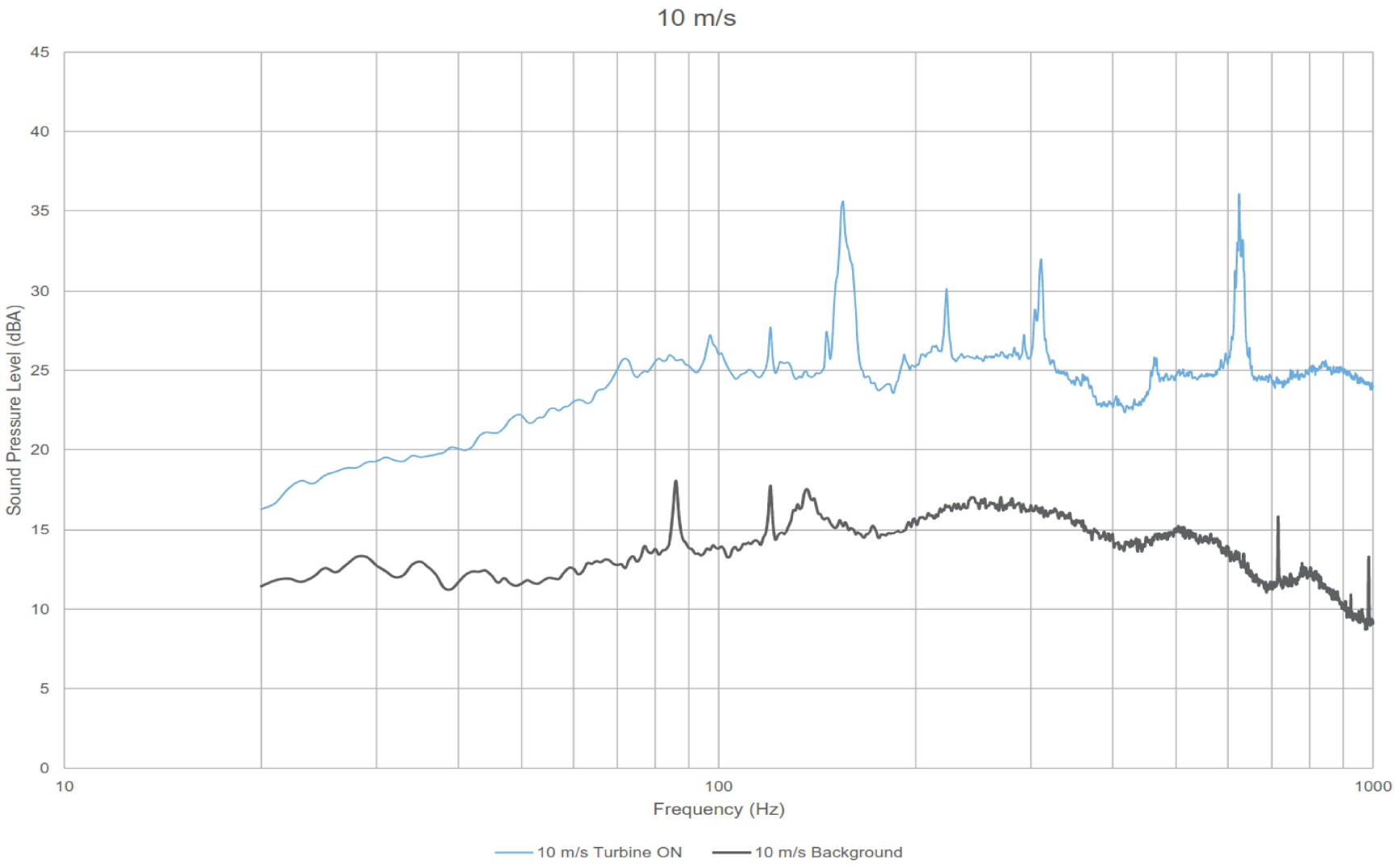
aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs Background at 9 m/s

Figure D.05



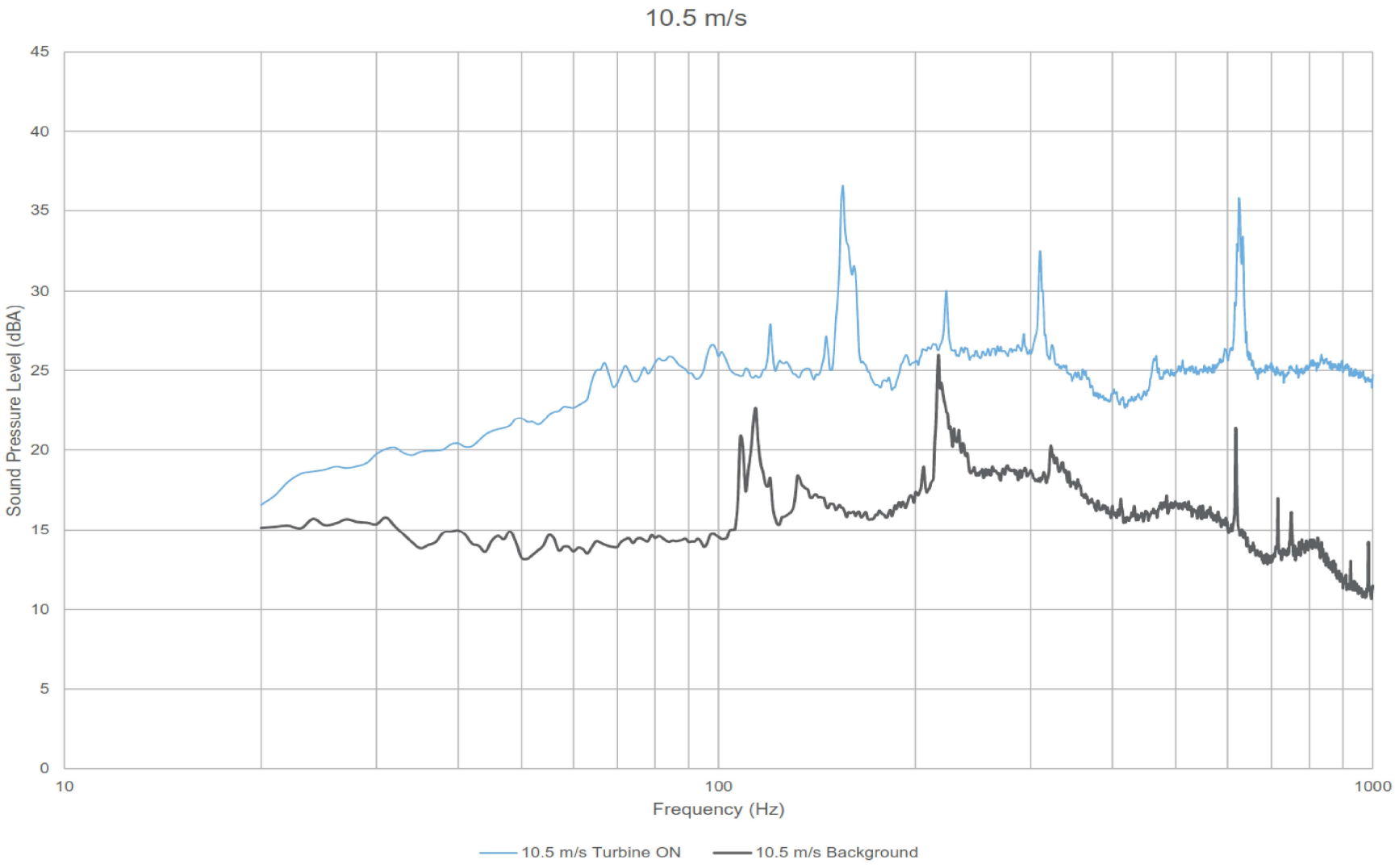
aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs Background at 9.5 m/s

Figure D.06



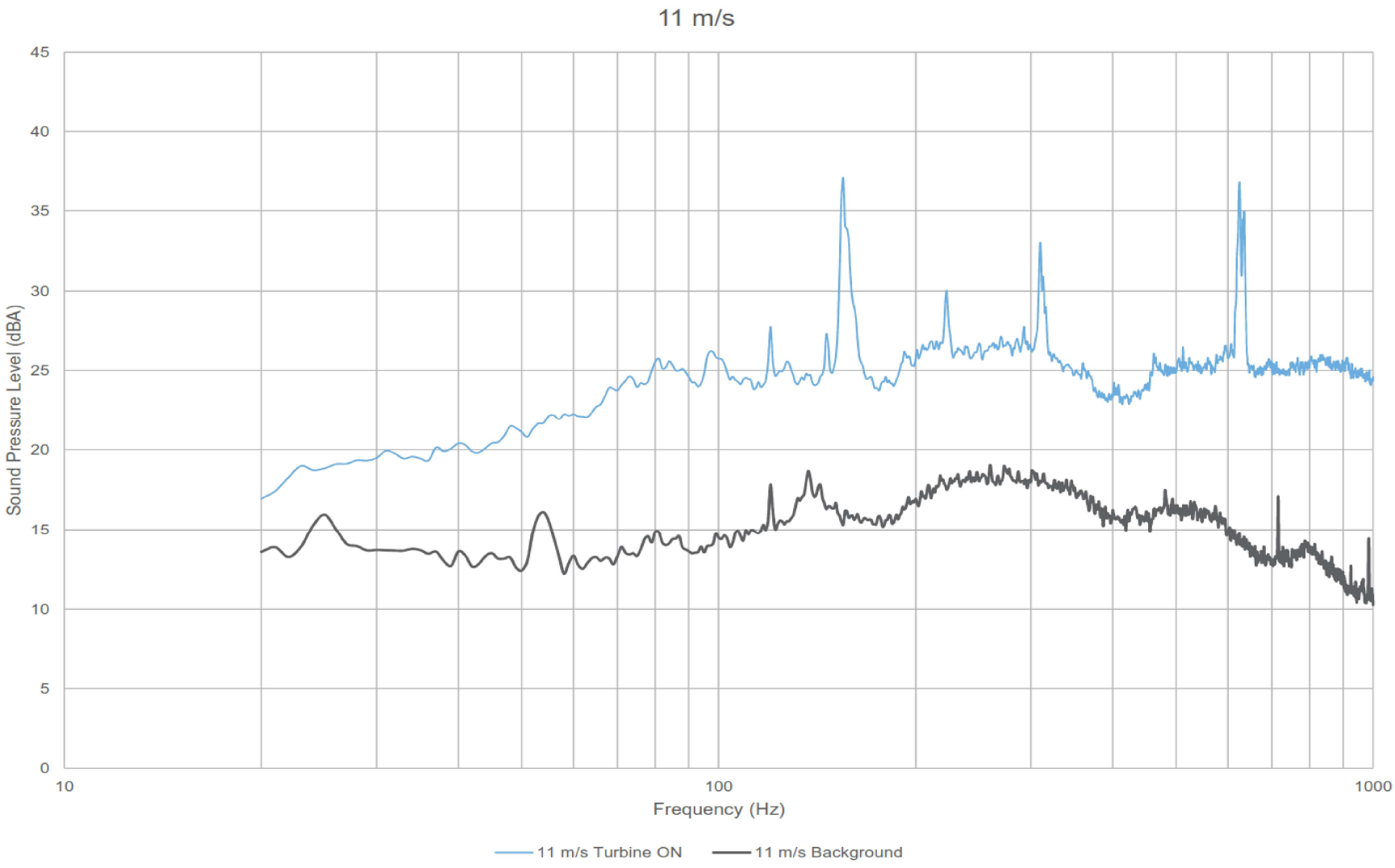
aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs Background at 10 m/s

Figure D.07



aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs Background at 10.5 m/s

Figure D.08



aercoustics	14462.00.T80.RP5 Scale: NTS Drawn by: SS Reviewed by: AM Date: Oct 25, 2017 Revision: 1	**Project Name** Jericho Wind Farm - Turbine T80 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra - Turbine ON vs Background at 11 m/s

Figure D.09

Table D.01 Tonality Assessment Table - 7 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
31	120			21.3	39.6	36.3	-3.3	-2.0	-1.3
85	121			21.8	40.0	32.7	-7.3	-2.0	-5.3
92	121			21.6	39.9	35.5	-4.4	-2.0	-2.3
782	122			20.9	39.2	34.4	-4.8	-2.0	-2.8
86	122			21.8	40.1	33.2	-7.0	-2.0	-4.9
336	122			21.0	39.3	34.9	-4.4	-2.0	-2.4
783	122			21.2	39.5	34.9	-4.6	-2.0	-2.6
327	123			21.5	39.8	34.8	-5.0	-2.0	-3.0
605	123			22.4	40.7	36.1	-4.6	-2.0	-2.5
147	123			22.0	40.2	35.1	-5.2	-2.0	-3.2
276	123			22.6	40.9	32.3	-8.5	-2.0	-6.5
169	123			21.8	40.0	38.6	-1.5	-2.0	0.5
198	123			21.6	39.8	33.8	-6.1	-2.0	-4.1
134	123			22.7	41.0	35.3	-5.7	-2.0	-3.7
84	123			22.3	40.5	36.5	-4.0	-2.0	-2.0
132	123			21.5	39.8	33.4	-6.4	-2.0	-4.4
402	123			20.8	39.1	33.3	-5.8	-2.0	-3.8
645	123			21.0	39.3	36.3	-3.0	-2.0	-1.0
325	123			22.3	40.6	32.5	-8.1	-2.0	-6.1
512	123			21.2	39.5	32.6	-6.9	-2.0	-4.9
274	123			23.0	41.3	34.7	-6.5	-2.0	-4.5
8	123			21.5	39.8	33.7	-6.0	-2.0	-4.0
434	123			21.4	39.6	34.2	-5.5	-2.0	-3.5
602	123			22.8	41.1	35.9	-5.2	-2.0	-3.2
200	123			22.6	40.8	36.3	-4.6	-2.0	-2.6
501	123			20.8	39.1	32.6	-6.6	-2.0	-4.6
581	123			22.6	40.9	32.5	-8.5	-2.0	-6.5
435	123			21.2	39.4	34.4	-5.0	-2.0	-3.0
143	123			22.2	40.5	36.1	-4.4	-2.0	-2.3
63	123			21.2	39.5	34.8	-4.7	-2.0	-2.7
81	123			21.8	40.1	37.3	-2.8	-2.0	-0.8
527	123			20.7	39.0	34.1	-4.9	-2.0	-2.9
110	124			21.2	39.5	35.9	-3.6	-2.0	-1.6
28	124			21.7	40.0	39.4	-0.6	-2.0	1.5
80	124			21.6	39.9	40.0	0.1	-2.0	2.1
338	124			20.8	39.1	36.5	-2.6	-2.0	-0.6
193	124			22.8	41.1	30.8	-10.2	-2.0	-8.2
560	124			21.8	40.1	32.4	-7.8	-2.0	-5.7
572	124			22.2	40.5	34.2	-6.3	-2.0	-4.3
182	124			22.0	40.3	37.4	-2.9	-2.0	-0.9
203	124			22.7	41.0	37.4	-3.6	-2.0	-1.6
197	124			21.2	39.5	38.6	-0.9	-2.0	1.1
83	124			22.6	40.9	36.8	-4.1	-2.0	-2.1
601	124			22.5	40.8	37.4	-3.4	-2.0	-1.4
170	124			21.4	39.7	38.1	-1.6	-2.0	0.4
571	124			22.4	40.7	37.7	-3.0	-2.0	-1.0
263	124			22.7	41.0	33.8	-7.2	-2.0	-5.2
24	124			20.6	38.9	36.6	-2.3	-2.0	-0.2
781	124			21.4	39.7	35.2	-4.5	-2.0	-2.5
175	124			22.5	40.8	36.7	-4.1	-2.0	-2.1
617	124			20.6	38.9	34.7	-4.1	-2.0	-2.1
45	124			22.2	40.5	35.5	-5.0	-2.0	-3.0
335	124			21.1	39.4	37.0	-2.4	-2.0	-0.4
196	124			21.6	39.9	37.7	-2.2	-2.0	-0.2
2	124			21.7	40.0	36.7	-3.3	-2.0	-1.3
543	124			21.2	39.5	37.8	-1.7	-2.0	0.3
339	125			21.7	40.0	33.7	-6.3	-2.0	-4.3
417	125			20.7	39.0	37.1	-1.9	-2.0	0.1
29	125			21.2	39.5	38.5	-1.1	-2.0	1.0
206	125			22.2	40.5	33.8	-6.7	-2.0	-4.6
71	125			22.7	40.9	37.7	-3.3	-2.0	-1.3
181	125			21.7	40.0	36.7	-3.3	-2.0	-1.3
399	125			22.2	40.5	35.3	-5.2	-2.0	-3.2
286	125			22.7	41.0	36.7	-4.4	-2.0	-2.3
554	125			22.5	40.8	31.2	-9.6	-2.0	-7.6
168	126			21.6	39.9	38.3	-1.6	-2.0	0.4
613	126			20.9	39.2	36.3	-2.8	-2.0	-0.8
614	126			21.6	39.9	32.9	-7.0	-2.0	-5.0
505	126			23.1	41.4	29.6	-11.9	-2.0	-9.8

Table D.01 Tonality Assessment Table - 7 m/s

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
378	126			20.6	38.9	32.5	-6.4	-2.0	-4.4
44	127			21.9	40.2	33.0	-7.1	-2.0	-5.1
167	127			21.1	39.4	37.8	-1.6	-2.0	0.4
340	127			22.5	40.8	36.3	-4.5	-2.0	-2.5
275	127			22.8	41.1	34.6	-6.5	-2.0	-4.5
201	127			22.4	40.7	33.1	-7.6	-2.0	-5.6
584	127			22.9	41.2	33.9	-7.3	-2.0	-5.3
202	127			22.2	40.5	34.0	-6.5	-2.0	-4.5
23	127			22.0	40.2	32.2	-8.0	-2.0	-6.0
401	127			21.6	39.9	35.2	-4.8	-2.0	-2.7
43	128			21.6	39.9	34.8	-5.1	-2.0	-3.1
495	128			22.5	40.8	37.1	-3.6	-2.0	-1.6
211	129			21.7	40.0	36.1	-3.9	-2.0	-1.9
611	129			23.5	41.8	36.7	-5.1	-2.0	-3.1
511	129			21.6	39.9	38.8	-1.1	-2.0	0.9
212	129			22.4	40.7	38.0	-2.8	-2.0	-0.8
582	129			22.9	41.1	32.5	-8.6	-2.0	-6.6
583	129			22.3	40.6	36.0	-4.6	-2.0	-2.6
93	129			22.8	41.1	38.9	-2.2	-2.0	-0.2
391	129			22.2	40.5	32.0	-8.5	-2.0	-6.5
195	129			21.7	40.0	34.9	-5.1	-2.0	-3.1
612	129			21.2	39.4	36.9	-2.5	-2.0	-0.5
194	129			23.2	41.5	31.7	-9.8	-2.0	-7.8
400	129			22.8	41.1	40.2	-0.9	-2.0	1.2
640	130			23.3	41.6	38.8	-2.7	-2.0	-0.7
293	130			23.0	41.3	37.9	-3.3	-2.0	-1.3
609	130			22.9	41.2	35.3	-5.9	-2.0	-3.9
407	130			23.2	41.5	40.7	-0.8	-2.0	1.3
290	130			23.9	42.1	32.7	-9.5	-2.0	-7.5
526	130			22.0	40.3	38.4	-1.9	-2.0	0.1
616	130			21.7	40.0	37.9	-2.1	-2.0	0.0
488	130			22.6	40.9	37.9	-3.0	-2.0	-1.0
496	130			23.3	41.6	40.5	-1.1	-2.0	0.9
767	130			23.2	41.5	38.5	-3.0	-2.0	-1.0
615	130			22.4	40.6	40.1	-0.5	-2.0	1.5
377	130			21.7	40.0	39.5	-0.5	-2.0	1.5
12	130			21.9	40.2	35.5	-4.8	-2.0	-2.7
489	130			22.8	41.1	40.0	-1.2	-2.0	0.9
94	130			22.8	41.1	40.8	-0.3	-2.0	1.7
142	131			22.8	41.1	39.2	-1.9	-2.0	0.2
376	131			22.3	40.6	38.4	-2.2	-2.0	-0.1
284	131			23.8	42.1	39.0	-3.1	-2.0	-1.1
272	131			22.4	40.7	37.3	-3.3	-2.0	-1.3
156	133			22.6	40.9	42.2	1.2	-2.0	3.3
308	134			23.3	41.6	35.3	-6.2	-2.0	-4.2
383	135			23.6	41.9	39.8	-2.0	-2.0	0.0
461	135			22.5	40.8	40.7	-0.1	-2.0	1.9
556	135			24.9	43.2	37.9	-5.4	-2.0	-3.3
Average	126						-3.7	-2.0	-1.7

Table D.01 Tonality Assessment Table - 7 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
308	444			20.4	39.2	33.5	-5.7	-2.2	-3.5
156	455			20.9	39.7	30.6	-9.1	-2.3	-6.9
177	466			20.8	39.7	34.1	-5.5	-2.3	-3.3
505	478			21.0	39.9	32.5	-7.3	-2.3	-5.1
110	481			20.8	39.6	37.7	-1.9	-2.3	0.3
31	481			21.1	40.0	39.0	-1.0	-2.3	1.3
132	483			21.0	39.9	34.2	-5.7	-2.3	-3.4
617	483			20.2	39.1	33.3	-5.8	-2.3	-3.5
206	483			20.0	38.9	35.7	-3.2	-2.3	-1.0
81	484			20.4	39.3	39.3	0.1	-2.3	2.3
8	486			20.7	39.6	36.9	-2.7	-2.3	-0.4
327	487			20.5	39.4	32.8	-6.6	-2.3	-4.3
198	487			19.5	38.4	36.2	-2.2	-2.3	0.1
24	487			19.9	38.8	38.0	-0.8	-2.3	1.5
193	488			20.6	39.5	36.3	-3.2	-2.3	-0.9
501	488			20.6	39.5	39.9	0.4	-2.3	2.7
402	488			20.7	39.6	39.1	-0.5	-2.3	1.8
336	489			20.1	39.0	41.3	2.3	-2.3	4.6
85	489			20.0	38.9	37.5	-1.4	-2.3	0.8
84	489			20.8	39.7	39.5	-0.2	-2.3	2.1
200	489			20.6	39.5	36.6	-2.9	-2.3	-0.6
143	489			20.3	39.2	35.5	-3.7	-2.3	-1.4
175	489			20.4	39.3	35.7	-3.6	-2.3	-1.3
290	491			21.7	40.6	34.6	-6.0	-2.3	-3.8
325	491			21.2	40.1	34.6	-5.5	-2.3	-3.2
645	491			20.8	39.7	37.8	-1.9	-2.3	0.4
581	491			20.3	39.2	38.3	-0.9	-2.3	1.4
276	492			20.3	39.2	39.2	0.0	-2.3	2.2
147	492			20.1	39.0	35.7	-3.3	-2.3	-1.0
782	492			20.5	39.4	39.3	-0.1	-2.3	2.2
86	492			20.1	39.0	35.0	-3.9	-2.3	-1.6
783	494			20.6	39.5	41.1	1.6	-2.3	3.9
527	494			20.5	39.5	33.6	-5.8	-2.3	-3.6
Average	485						-2.1	-2.3	0.2

Table D.01 Tonality Assessment Table - 7 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
335	497			21.4	40.3	30.8	-9.5	-2.3	-7.3
338	497			20.2	39.1	38.4	-0.7	-2.3	1.6
512	498			21.2	40.1	38.3	-1.8	-2.3	0.5
196	499			20.6	39.5	32.1	-7.4	-2.3	-5.1
80	499			20.6	39.5	37.6	-1.9	-2.3	0.4
434	499			20.8	39.7	38.9	-0.8	-2.3	1.5
605	499			19.8	38.7	36.6	-2.2	-2.3	0.1
572	499			19.9	38.8	36.5	-2.3	-2.3	0.0
182	499			20.6	39.5	38.1	-1.5	-2.3	0.8
28	500			21.4	40.3	35.8	-4.5	-2.3	-2.2
197	500			19.7	38.7	33.0	-5.7	-2.3	-3.4
63	501			20.5	39.5	32.5	-6.9	-2.3	-4.6
781	501			20.6	39.6	39.9	0.3	-2.3	2.6
571	501			20.6	39.5	37.4	-2.1	-2.3	0.2
169	501			20.2	39.2	36.0	-3.2	-2.3	-0.9
601	501			20.5	39.4	35.7	-3.7	-2.3	-1.4
29	502			20.8	39.7	37.2	-2.5	-2.3	-0.2
2	502			20.1	39.0	36.6	-2.4	-2.3	-0.1
170	503			20.9	39.8	34.3	-5.5	-2.3	-3.2
83	503			20.9	39.9	33.7	-6.2	-2.3	-3.9
554	505			20.3	39.3	32.7	-6.5	-2.3	-4.2
584	505			21.0	39.9	37.5	-2.4	-2.3	-0.1
203	505			21.4	40.4	32.3	-8.1	-2.3	-5.8
286	505			21.1	40.0	33.7	-6.4	-2.3	-4.1
511	506			22.7	41.7	37.3	-4.4	-2.3	-2.1
399	506			20.4	39.4	41.1	1.8	-2.3	4.1
339	507			20.9	39.9	36.3	-3.6	-2.3	-1.3
71	508			20.9	39.8	34.5	-5.3	-2.3	-3.0
401	508			21.6	40.5	34.0	-6.5	-2.3	-4.2
614	508			20.7	39.6	33.7	-5.9	-2.3	-3.6
168	509			20.9	39.8	39.2	-0.6	-2.3	1.7
142	509			21.6	40.5	30.5	-10.1	-2.3	-7.7
613	509			20.3	39.3	38.4	-0.8	-2.3	1.5
202	509			20.3	39.3	33.9	-5.3	-2.3	-3.0
378	510			20.9	39.8	39.3	-0.6	-2.3	1.8
263	514			21.4	40.4	28.3	-12.1	-2.3	-9.8
45	514			21.1	40.0	37.1	-3.0	-2.3	-0.6
609	515			21.7	40.7	32.4	-8.3	-2.3	-6.0
275	515			21.1	40.1	34.3	-5.8	-2.3	-3.4
612	516			21.4	40.3	38.0	-2.4	-2.3	0.0
201	516			21.0	40.0	34.0	-6.0	-2.3	-3.7
44	516			21.0	39.9	38.1	-1.8	-2.3	0.5
767	518			21.8	40.8	33.8	-6.9	-2.3	-4.6
134	519			21.3	40.3	33.5	-6.8	-2.3	-4.5
495	519			21.9	40.9	37.3	-3.6	-2.3	-1.3
526	519			21.4	40.3	32.0	-8.4	-2.3	-6.1
23	519			20.4	39.3	38.2	-1.1	-2.3	1.2
12	519			20.3	39.3	38.9	-0.4	-2.3	1.9
400	519			21.0	39.9	37.2	-2.8	-2.3	-0.5
488	520			21.8	40.8	32.7	-8.1	-2.3	-5.8
167	520			22.0	40.9	28.3	-12.6	-2.3	-10.3
284	521			21.5	40.4	31.4	-9.0	-2.3	-6.7
340	522			21.8	40.8	28.4	-12.4	-2.3	-10.0
194	522			20.8	39.8	31.7	-8.0	-2.3	-5.7
489	522			21.8	40.8	37.5	-3.3	-2.3	-1.0
582	523			21.0	40.0	37.8	-2.2	-2.3	0.1
43	523			21.7	40.7	37.9	-2.8	-2.3	-0.5
583	523			20.7	39.7	38.9	-0.8	-2.3	1.5
272	523			21.4	40.4	32.7	-7.7	-2.3	-5.4
211	523			21.2	40.2	36.3	-3.8	-2.3	-1.5
195	523			21.0	40.0	33.5	-6.5	-2.3	-4.2
377	524			22.0	41.0	31.5	-9.4	-2.3	-7.1
611	525			21.5	40.5	35.6	-4.9	-2.3	-2.5
616	525			21.3	40.3	35.4	-4.9	-2.3	-2.5
615	526			21.3	40.3	28.5	-11.9	-2.3	-9.5
496	526			22.0	41.0	34.9	-6.1	-2.3	-3.8
212	526			21.4	40.4	34.3	-6.1	-2.3	-3.8
94	527			22.3	41.3	35.8	-5.5	-2.3	-3.2
93	530			22.3	41.3	34.7	-6.6	-2.3	-4.3

Table D.01 Tonality Assessment Table - 7 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
407	533			22.2	41.2	34.0	-7.3	-2.3	-4.9
Average	512						-3.8	-2.3	-1.5

Table D.02 Tonality Assessment Table - 7.5 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
67	130			21.2	39.4	41.0	1.5	-2.0	3.6
9	130			23.1	41.4	41.2	-0.2	-2.0	1.8
478	130			22.4	40.7	39.4	-1.2	-2.0	0.8
328	130			24.0	42.3	42.5	0.2	-2.0	2.2
334	130			21.9	40.1	41.4	1.2	-2.0	3.2
16	130			21.6	39.8	36.9	-3.0	-2.0	-1.0
163	130			23.1	41.3	40.0	-1.3	-2.0	0.7
210	130			22.0	40.3	42.0	1.7	-2.0	3.7
494	130			22.8	41.1	41.8	0.7	-2.0	2.7
416	130			22.3	40.5	41.1	0.6	-2.0	2.6
644	130			21.8	40.1	40.2	0.1	-2.0	2.1
209	131			22.5	40.8	42.2	1.4	-2.0	3.4
265	131			23.7	42.0	43.1	1.1	-2.0	3.1
42	131			22.5	40.8	39.8	-0.9	-2.0	1.1
497	131			23.9	42.2	43.2	1.0	-2.0	3.1
208	131			23.2	41.5	42.8	1.3	-2.0	3.4
271	131			23.2	41.5	41.4	-0.1	-2.0	1.9
610	131			23.2	41.5	39.1	-2.4	-2.0	-0.4
213	131			22.0	40.3	42.8	2.5	-2.0	4.5
285	132			23.9	42.2	44.7	2.6	-2.0	4.6
37	132			21.5	39.8	41.7	1.9	-2.0	3.9
267	132			25.3	43.6	42.3	-1.3	-2.0	0.7
36	132			21.1	39.3	44.3	4.9	-2.0	6.9
264	132			23.4	41.7	41.8	0.1	-2.0	2.1
778	132			23.3	41.6	45.2	3.6	-2.0	5.6
162	132			23.6	41.9	43.6	1.7	-2.0	3.7
408	132			23.9	42.2	43.0	0.7	-2.0	2.7
161	132			22.2	40.5	43.3	2.8	-2.0	4.8
774	132			22.7	41.0	44.2	3.2	-2.0	5.2
207	132			23.1	41.3	42.1	0.7	-2.0	2.7
13	132			23.0	41.3	41.6	0.3	-2.0	2.3
70	132			23.3	41.6	40.3	-1.3	-2.0	0.7
15	132			21.3	39.6	43.2	3.7	-2.0	5.7
777	132			23.1	41.4	44.5	3.1	-2.0	5.1
109	132			22.3	40.6	38.4	-2.2	-2.0	-0.2
270	133			23.7	42.0	44.7	2.7	-2.0	4.7
38	133			22.4	40.7	44.3	3.6	-2.0	5.6
41	133			22.1	40.4	45.9	5.5	-2.0	7.5
64	133			23.4	41.7	41.7	0.0	-2.0	2.0
268	133			24.5	42.8	42.7	0.0	-2.0	2.0
917	133			24.4	42.7	44.2	1.5	-2.0	3.6
11	133			21.9	40.2	42.0	1.9	-2.0	3.9
35	133			21.9	40.2	46.1	5.8	-2.0	7.8
40	133			22.2	40.5	46.4	6.0	-2.0	8.0
39	133			21.9	40.2	45.5	5.3	-2.0	7.4
17	133			21.9	40.1	45.0	4.9	-2.0	6.9
68	133			22.6	40.8	44.1	3.3	-2.0	5.3
160	133			22.9	41.2	45.9	4.8	-2.0	6.8
559	134			22.6	40.9	43.5	2.6	-2.0	4.6
269	134			23.8	42.1	42.5	0.4	-2.0	2.4
69	134			23.7	42.0	42.8	0.9	-2.0	2.9
775	134			22.4	40.7	43.3	2.6	-2.0	4.6
916	134			24.4	42.7	44.7	2.0	-2.0	4.0
266	134			24.0	42.3	44.2	1.9	-2.0	3.9
641	134			22.8	41.1	44.4	3.3	-2.0	5.3
166	134			22.1	40.4	44.6	4.2	-2.0	6.2
164	134			21.9	40.2	45.9	5.7	-2.0	7.7
490	135			23.3	41.6	43.1	1.4	-2.0	3.4
558	135			22.2	40.5	44.7	4.2	-2.0	6.2
410	135			23.1	41.4	44.1	2.7	-2.0	4.7
776	135			23.4	41.7	45.8	4.1	-2.0	6.1
498	135			25.1	43.4	45.6	2.2	-2.0	4.2
500	135			22.3	40.6	42.3	1.7	-2.0	3.7
165	135			22.8	41.1	45.0	3.9	-2.0	5.9

Table D.02 Tonality Assessment Table - 7.5 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
642	135			23.0	41.3	45.3	4.0	-2.0	6.0
525	135			23.1	41.3	43.3	1.9	-2.0	3.9
333	135			23.2	41.5	42.8	1.3	-2.0	3.3
643	135			23.0	41.3	45.1	3.8	-2.0	5.8
409	135			23.7	42.0	44.2	2.2	-2.0	4.2
32	135			22.6	40.9	43.2	2.3	-2.0	4.3
324	135			22.8	41.1	41.3	0.3	-2.0	2.3
510	135			22.0	40.3	44.4	4.1	-2.0	6.1
524	136			22.5	40.8	44.0	3.2	-2.0	5.2
475	136			22.2	40.5	45.8	5.3	-2.0	7.3
332	136			23.9	42.2	43.5	1.3	-2.0	3.3
780	136			22.2	40.5	42.7	2.2	-2.0	4.2
19	136			21.3	39.6	44.2	4.7	-2.0	6.7
509	136			22.7	41.0	45.8	4.8	-2.0	6.9
10	136			23.4	41.7	43.2	1.5	-2.0	3.5
477	136			22.8	41.1	44.8	3.7	-2.0	5.7
768	138			22.4	40.7	44.3	3.7	-2.0	5.7
533	138			24.0	42.3	42.7	0.4	-2.0	2.4
108	138			21.6	39.9	44.6	4.7	-2.0	6.7
66	138			22.2	40.5	44.2	3.6	-2.0	5.7
135	138			24.3	42.6	43.3	0.7	-2.0	2.7
542	138			23.1	41.4	44.2	2.8	-2.0	4.8
131	138			22.7	41.0	44.3	3.3	-2.0	5.3
14	138			22.0	40.3	45.1	4.8	-2.0	6.8
557	138			24.2	42.5	46.2	3.7	-2.0	5.7
915	138			25.4	43.7	44.8	1.1	-2.0	3.1
499	138			23.5	41.8	44.1	2.3	-2.0	4.3
65	138			23.4	41.7	46.6	4.9	-2.0	6.9
292	138			23.6	41.9	44.7	2.8	-2.0	4.8
415	138			22.7	41.0	44.2	3.2	-2.0	5.2
779	138			22.8	41.1	44.3	3.2	-2.0	5.2
1	138			23.2	41.5	44.7	3.2	-2.0	5.2
22	138			22.7	41.0	44.3	3.4	-2.0	5.4
329	138			24.9	43.2	45.1	2.0	-2.0	4.0
141	138			23.4	41.7	44.6	3.0	-2.0	5.0
18	138			21.3	39.6	46.8	7.3	-2.0	9.3
180	138			23.1	41.4	44.9	3.6	-2.0	5.6
341	138			23.7	42.0	44.9	2.9	-2.0	4.9
331	138			23.7	42.0	43.9	2.0	-2.0	4.0
521	141			23.3	41.6	46.7	5.1	-2.0	7.1
773	141			22.6	40.9	45.2	4.3	-2.0	6.3
390	141			22.8	41.1	46.3	5.2	-2.0	7.2
Average	134						2.8	-2.0	4.8

Table D.02 Tonality Assessment Table - 7.5 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
109	1037			22.0	42.4	34.0	-8.4	-2.9	-5.6
16	1042			21.3	41.8	36.2	-5.6	-2.9	-2.8
271	1043			21.3	41.7	38.6	-3.1	-2.9	-0.3
328	1045			22.1	42.6	31.7	-10.9	-2.9	-8.1
334	1045			21.9	42.4	36.3	-6.1	-2.9	-3.2
610	1046			21.2	41.7	40.5	-1.2	-2.9	1.6
42	1051			22.2	42.7	37.9	-4.9	-2.9	-2.0
67	1052			21.7	42.2	40.6	-1.6	-2.9	1.3
163	1054			21.3	41.8	37.1	-4.7	-2.9	-1.9
210	1055			21.8	42.3	38.5	-3.8	-2.9	-1.0
267	1055			22.6	43.1	32.8	-10.3	-2.9	-7.5
416	1055			22.1	42.6	32.7	-9.9	-2.9	-7.0
37	1056			21.9	42.4	36.5	-5.9	-2.9	-3.1
13	1056			22.0	42.5	33.8	-8.7	-2.9	-5.8
209	1057			21.9	42.4	38.2	-4.2	-2.9	-1.4
11	1057			21.8	42.4	36.6	-5.7	-2.9	-2.9
264	1059			22.5	43.0	32.8	-10.2	-2.9	-7.3
497	1060			22.0	42.5	38.0	-4.5	-2.9	-1.6
15	1060			22.4	42.9	31.8	-11.1	-2.9	-8.2
778	1064			22.2	42.8	38.6	-4.2	-2.9	-1.3
208	1064			22.7	43.2	32.3	-11.0	-2.9	-8.1
777	1065			23.2	43.7	39.6	-4.1	-2.9	-1.3
162	1066			21.8	42.3	31.1	-11.2	-2.9	-8.3
644	1066			22.2	42.8	36.5	-6.2	-2.9	-3.3
213	1066			22.5	43.1	35.3	-7.8	-2.9	-4.9
36	1067			21.7	42.2	35.6	-6.6	-2.9	-3.7
774	1067			21.9	42.4	37.2	-5.2	-2.9	-2.3
285	1068			21.5	42.0	35.1	-7.0	-2.9	-4.1
415	1069			23.0	43.5	30.5	-13.0	-2.9	-10.1
490	1070			23.4	43.9	36.7	-7.3	-2.9	-4.4
40	1072			22.0	42.5	37.7	-4.8	-2.9	-1.9
408	1073			21.4	42.0	39.7	-2.3	-2.9	0.6
70	1073			21.8	42.4	30.5	-11.9	-2.9	-9.0
38	1073			22.2	42.8	34.8	-8.0	-2.9	-5.1
41	1073			22.4	42.9	39.3	-3.6	-2.9	-0.7
478	1073			21.8	42.4	34.9	-7.5	-2.9	-4.6
265	1074			21.7	42.3	35.6	-6.7	-2.9	-3.9
39	1074			22.0	42.6	39.5	-3.1	-2.9	-0.2
917	1074			21.9	42.4	36.5	-5.9	-2.9	-3.0
641	1075			22.6	43.1	41.0	-2.2	-2.9	0.7
207	1075			22.7	43.3	34.6	-8.7	-2.9	-5.8
525	1078			22.7	43.3	37.8	-5.5	-2.9	-2.6
266	1080			22.0	42.5	35.6	-6.9	-2.9	-4.1
916	1082			22.8	43.4	38.8	-4.6	-2.9	-1.7
775	1083			23.0	43.6	38.4	-5.2	-2.9	-2.3
410	1084			22.6	43.2	37.5	-5.7	-2.9	-2.8
477	1085			24.3	44.9	35.7	-9.2	-2.9	-6.3
270	1085			22.5	43.1	35.0	-8.0	-2.9	-5.1
510	1085			23.0	43.6	37.0	-6.6	-2.9	-3.7
166	1086			22.6	43.2	36.7	-6.5	-2.9	-3.6
269	1086			22.3	42.9	40.3	-2.6	-2.9	0.3
68	1086			21.8	42.4	39.3	-3.1	-2.9	-0.2
64	1087			23.3	43.9	33.9	-10.0	-2.9	-7.1
333	1087			22.8	43.4	32.6	-10.8	-2.9	-7.9
164	1087			22.7	43.3	34.7	-8.6	-2.9	-5.7
69	1088			22.1	42.7	39.8	-2.9	-2.9	0.0
165	1088			22.4	43.0	38.9	-4.2	-2.9	-1.3
9	1088			22.4	43.0	33.8	-9.2	-2.9	-6.3
390	1088			23.8	44.4	30.3	-14.1	-2.9	-11.2
409	1089			22.1	42.7	33.7	-9.0	-2.9	-6.1
643	1091			22.9	43.5	39.0	-4.5	-2.9	-1.6
22	1092			22.7	43.3	31.4	-11.9	-2.9	-9.0
642	1092			22.2	42.8	39.3	-3.5	-2.9	-0.6
500	1094			22.8	43.4	34.3	-9.1	-2.9	-6.2

Table D.02 Tonality Assessment Table - 7.5 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
509	1094			22.9	43.5	38.5	-5.0	-2.9	-2.1
475	1095			23.3	44.0	40.5	-3.5	-2.9	-0.6
498	1095			24.4	45.0	41.7	-3.3	-2.9	-0.4
108	1096			22.9	43.6	29.3	-14.3	-2.9	-11.4
776	1096			23.2	43.8	39.1	-4.7	-2.9	-1.8
19	1098			22.0	42.7	41.0	-1.6	-2.9	1.3
331	1100			22.9	43.5	34.6	-9.0	-2.9	-6.1
768	1101			23.4	44.1	33.9	-10.2	-2.9	-7.3
32	1102			23.3	43.9	35.0	-8.9	-2.9	-6.0
332	1102			22.6	43.2	33.9	-9.3	-2.9	-6.4
524	1102			22.9	43.5	38.1	-5.4	-2.9	-2.5
17	1105			22.2	42.8	38.5	-4.3	-2.9	-1.4
10	1108			22.4	43.0	37.8	-5.3	-2.9	-2.4
499	1108			23.6	44.2	41.4	-2.8	-2.9	0.1
18	1112			22.3	43.0	42.5	-0.5	-2.9	2.4
Average	1076						-5.5	-2.9	-2.7

Table D.03 Tonality Assessment Table - 8 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID:14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
506	135			26.0	44.3	43.1	-1.2	-2.0	0.8
508	136			24.3	42.6	44.6	2.1	-2.0	4.1
463	136			23.7	42.0	44.4	2.5	-2.0	4.5
464	136			24.4	42.7	45.3	2.6	-2.0	4.7
104	138			24.0	42.3	44.7	2.4	-2.0	4.4
137	138			24.8	43.1	45.4	2.3	-2.0	4.4
138	138			24.1	42.4	45.6	3.2	-2.0	5.3
413	138			24.4	42.7	47.8	5.1	-2.0	7.1
918	138			25.7	44.0	43.9	-0.1	-2.0	2.0
105	138			24.5	42.8	47.4	4.5	-2.0	6.6
107	138			23.9	42.2	44.6	2.4	-2.0	4.4
159	138			23.9	42.2	47.2	5.0	-2.0	7.0
291	138			24.4	42.7	45.1	2.4	-2.0	4.5
128	138			21.4	39.7	45.7	6.0	-2.0	8.0
523	138			22.6	40.9	45.0	4.1	-2.0	6.1
20	138			23.1	41.4	45.4	4.0	-2.0	6.0
33	138			21.8	40.1	46.7	6.7	-2.0	8.7
129	138			21.5	39.8	46.3	6.4	-2.0	8.4
323	138			23.4	41.7	48.5	6.9	-2.0	8.9
540	139			23.2	41.5	45.0	3.5	-2.0	5.5
474	139			22.4	40.7	45.5	4.8	-2.0	6.8
462	139			23.6	41.9	44.2	2.2	-2.0	4.2
491	139			24.7	43.0	47.1	4.1	-2.0	6.1
330	139			24.4	42.7	44.7	2.0	-2.0	4.0
476	139			23.2	41.5	45.0	3.5	-2.0	5.5
1182	139			25.3	43.6	43.4	-0.3	-2.0	1.8
770	140			23.2	41.5	43.6	2.1	-2.0	4.1
34	140			23.1	41.4	44.8	3.4	-2.0	5.5
769	140			22.7	41.0	43.9	2.9	-2.0	4.9
771	140			22.3	40.6	43.9	3.3	-2.0	5.4
178	140			26.3	44.6	43.9	-0.6	-2.0	1.4
414	140			23.6	41.9	46.0	4.1	-2.0	6.1
389	140			23.5	41.8	47.7	6.0	-2.0	8.0
322	140			23.7	42.0	45.5	3.5	-2.0	5.6
541	140			23.9	42.2	44.9	2.8	-2.0	4.8
321	141			24.4	42.7	44.5	1.8	-2.0	3.8
388	141			23.0	41.3	46.7	5.4	-2.0	7.4
1200	141			24.7	43.0	42.3	-0.7	-2.0	1.3
140	141			24.4	42.7	43.5	0.8	-2.0	2.8
1201	141			24.8	43.1	40.4	-2.7	-2.0	-0.7
412	141			24.5	42.8	44.7	2.0	-2.0	4.0
130	141			22.8	41.1	45.6	4.5	-2.0	6.6
1181	141			24.4	42.7	43.8	1.1	-2.0	3.1
522	141			22.8	41.1	47.9	6.9	-2.0	8.9
1180	141			24.4	42.7	44.8	2.1	-2.0	4.1
21	141			24.0	42.3	45.3	3.0	-2.0	5.0
539	141			25.0	43.3	44.3	1.0	-2.0	3.1
536	141			24.1	42.4	45.3	2.8	-2.0	4.9
126	141			24.9	43.2	45.5	2.3	-2.0	4.3
319	141			24.6	42.9	45.0	2.1	-2.0	4.1
384	141			23.2	41.5	47.7	6.2	-2.0	8.2
1179	141			24.7	43.0	45.7	2.7	-2.0	4.8
493	141			23.6	41.9	46.4	4.5	-2.0	6.5
411	141			25.2	43.5	45.9	2.4	-2.0	4.4
139	142			24.1	42.4	43.9	1.5	-2.0	3.5
342	142			23.2	41.5	41.1	-0.4	-2.0	1.6
772	142			24.2	42.5	45.2	2.6	-2.0	4.6
470	143			23.7	42.0	43.8	1.8	-2.0	3.8
385	143			23.8	42.1	43.6	1.5	-2.0	3.5
492	144			26.2	44.5	45.7	1.2	-2.0	3.2
127	144			23.8	42.1	43.4	1.3	-2.0	3.3
Average	140						3.3	-2.0	5.3

Table D.04 Tonality Assessment Table - 8.5 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
1187	114			26.2	44.5	48.8	4.3	-2.0	6.3
1186	122			26.8	45.1	46.6	1.4	-2.0	3.4
851	133			23.7	42.0	43.2	1.3	-2.0	3.3
850	134			23.3	41.6	45.6	4.0	-2.0	6.1
854	135			26.3	44.6	45.8	1.1	-2.0	3.2
309	138			25.8	44.1	45.7	1.6	-2.0	3.6
1183	138			26.6	44.9	42.0	-3.0	-2.0	-1.0
Average	131						2.0	-2.0	4.1

Table D.05 Tonality Assessment Table - 9 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
852	135			24.7	43.0	48.8	5.9	-2.0	7.9
853	135			24.7	43.0	49.3	6.3	-2.0	8.3
1193	146			26.4	44.7	40.6	-4.1	-2.0	-2.1
1173	149			25.4	43.7	39.3	-4.4	-2.0	-2.4
1197	149			26.3	44.6	36.2	-8.4	-2.0	-6.4
472	150			24.3	42.6	38.7	-3.9	-2.0	-1.9
856	150			25.6	44.0	36.4	-7.5	-2.0	-5.5
103	150			25.4	43.7	40.9	-2.8	-2.0	-0.8
858	150			26.3	44.6	38.8	-5.8	-2.0	-3.8
848	151			25.5	43.9	37.0	-6.9	-2.0	-4.9
1171	151			26.9	45.2	38.7	-6.5	-2.0	-4.5
1169	151			25.4	43.7	39.6	-4.0	-2.0	-2.0
1170	152			26.5	44.9	34.1	-10.7	-2.0	-8.7
855	153			26.9	45.2	33.5	-11.7	-2.0	-9.7
1123	154			25.9	44.3	37.6	-6.6	-2.0	-4.6
1120	154			25.2	43.5	38.7	-4.9	-2.0	-2.8
914	154			26.9	45.2	34.5	-10.7	-2.0	-8.7
Average	149						-1.5	-2.0	0.5

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
1169	606			23.9	43.1	39.3	-3.8	-2.4	-1.4
103	607			23.9	43.1	34.2	-8.9	-2.4	-6.5
858	608			24.4	43.6	38.3	-5.3	-2.4	-2.8
1171	609			24.6	43.8	41.1	-2.6	-2.4	-0.2
472	609			24.0	43.2	38.2	-5.0	-2.4	-2.5
856	615			24.1	43.3	36.8	-6.5	-2.4	-4.1
855	616			24.9	44.1	40.6	-3.5	-2.4	-1.0
1170	616			24.5	43.8	41.3	-2.5	-2.4	-0.1
1173	616			24.5	43.7	38.8	-4.9	-2.4	-2.4
914	620			24.6	43.8	30.9	-12.9	-2.4	-10.5
848	621			24.8	44.0	32.8	-11.3	-2.4	-8.8
1193	622			24.3	43.6	40.7	-2.8	-2.4	-0.4
1123	622			24.5	43.7	41.7	-2.0	-2.4	0.4
1120	623			24.2	43.4	37.3	-6.1	-2.4	-3.7
1197	626			25.0	44.2	35.5	-8.7	-2.4	-6.3
Average	616						-4.8	-2.4	-2.4

Table D.06 Tonality Assessment Table - 9.5 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
1166	148			25.9	44.2	42.0	-2.1	-2.0	-0.1
1138	149			25.3	43.7	44.8	1.2	-2.0	3.2
908	150			27.1	45.4	40.4	-4.9	-2.0	-2.9
907	150			26.9	45.2	40.2	-5.0	-2.0	-3.0
882	151			25.5	43.8	42.0	-1.8	-2.0	0.3
837	151			26.2	44.5	42.6	-1.9	-2.0	0.1
839	151			27.3	45.6	40.9	-4.7	-2.0	-2.7
1108	151			24.9	43.2	40.4	-2.8	-2.0	-0.8
1164	152			25.3	43.6	41.7	-1.9	-2.0	0.1
905	152			25.6	43.9	41.1	-2.8	-2.0	-0.8
950	152			26.2	44.5	37.4	-7.0	-2.0	-5.0
1114	152			25.2	43.5	37.6	-5.9	-2.0	-3.9
958	152			26.5	44.8	41.3	-3.5	-2.0	-1.5
1112	152			26.5	44.8	39.0	-5.8	-2.0	-3.8
928	152			26.1	44.4	40.7	-3.6	-2.0	-1.6
466	153			26.0	44.3	41.9	-2.4	-2.0	-0.4
1151	153			23.5	41.8	40.9	-1.0	-2.0	1.1
1083	154			24.9	43.2	41.6	-1.6	-2.0	0.4
1212	154			26.0	44.3	41.2	-3.2	-2.0	-1.2
1150	154			24.4	42.8	40.5	-2.2	-2.0	-0.2
863	154			27.3	45.6	38.3	-7.2	-2.0	-5.2
1215	154			25.6	43.9	38.9	-5.0	-2.0	-3.0
1113	154			25.3	43.6	40.6	-3.0	-2.0	-1.0
1116	154			26.3	44.6	41.3	-3.3	-2.0	-1.3
841	154			26.9	45.2	40.3	-4.9	-2.0	-2.9
1154	154			24.8	43.1	41.4	-1.7	-2.0	0.3
894	154			25.4	43.7	42.1	-1.6	-2.0	0.4
1021	154			24.0	42.4	42.4	0.0	-2.0	2.0
997	154			24.8	43.1	40.5	-2.6	-2.0	-0.6
880	155			26.4	44.7	43.8	-0.9	-2.0	1.1
1087	155			25.3	43.6	40.4	-3.2	-2.0	-1.2
1161	155			24.6	42.9	41.9	-1.0	-2.0	1.0
1117	155			26.3	44.7	39.7	-5.0	-2.0	-3.0
895	155			25.7	44.0	40.9	-3.0	-2.0	-1.0
876	155			24.8	43.1	40.9	-2.2	-2.0	-0.2
1096	155			24.7	43.0	43.1	0.1	-2.0	2.1
1158	155			24.2	42.6	39.8	-2.8	-2.0	-0.8
1009	155			25.7	44.0	41.9	-2.1	-2.0	-0.1
1159	155			24.4	42.7	40.9	-1.8	-2.0	0.2
1041	155			26.5	44.8	40.6	-4.2	-2.0	-2.2
903	155			25.5	43.8	39.3	-4.5	-2.0	-2.5
1026	155			25.5	43.8	40.4	-3.4	-2.0	-1.4
869	155			26.0	44.3	41.0	-3.4	-2.0	-1.4
1102	155			26.1	44.4	40.8	-3.5	-2.0	-1.5
865	156			26.1	44.4	42.0	-2.4	-2.0	-0.3
1029	157			24.5	42.8	40.2	-2.6	-2.0	-0.5
1213	157			25.1	43.4	40.5	-2.9	-2.0	-0.9
1105	158			25.4	43.7	40.6	-3.1	-2.0	-1.1
1143	158			26.0	44.3	41.2	-3.2	-2.0	-1.1
912	158			28.1	46.4	36.2	-10.2	-2.0	-8.2
929	158			25.9	44.2	39.0	-5.3	-2.0	-3.3
937	159			26.6	44.9	38.5	-6.4	-2.0	-4.4
998	159			25.3	43.6	42.2	-1.5	-2.0	0.6
314	159			25.2	43.5	43.4	-0.1	-2.0	1.9
861	159			27.4	45.7	42.5	-3.2	-2.0	-1.2
1203	160			25.9	44.2	38.7	-5.5	-2.0	-3.4
1144	161			26.0	44.3	41.1	-3.2	-2.0	-1.2
838	161			27.6	45.9	44.6	-1.3	-2.0	0.8
1190	162			26.9	45.2	43.4	-1.8	-2.0	0.2
860	164			27.1	45.4	43.6	-1.8	-2.0	0.2
Average	155						-2.7	-2.0	-0.7

Table D.06 Tonality Assessment Table - 9.5 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
841	619			24.6	43.8	41.5	-2.3	-2.4	0.1
1108	619			24.7	43.9	42.1	-1.8	-2.4	0.6
1151	620			25.1	44.3	44.2	-0.2	-2.4	2.2
1215	620			24.2	43.4	41.7	-1.7	-2.4	0.8
894	621			26.9	46.2	46.3	0.1	-2.4	2.6
1164	621			24.4	43.6	44.2	0.6	-2.4	3.0
958	622			25.2	44.5	42.0	-2.5	-2.4	-0.1
997	622			24.7	43.9	41.9	-2.0	-2.4	0.5
1116	623			25.0	44.2	43.9	-0.4	-2.4	2.1
1212	623			24.5	43.8	43.6	-0.1	-2.4	2.3
1083	624			25.1	44.3	44.2	-0.1	-2.4	2.4
1021	624			25.5	44.8	44.4	-0.4	-2.4	2.0
1113	624			24.9	44.2	45.9	1.7	-2.4	4.2
839	624			25.7	45.0	37.8	-7.1	-2.4	-4.7
1117	624			24.6	43.8	44.9	1.1	-2.4	3.5
1102	625			25.1	44.3	45.7	1.4	-2.4	3.8
1087	625			24.6	43.9	44.3	0.4	-2.4	2.9
880	625			25.4	44.6	46.6	2.0	-2.4	4.5
928	625			24.1	43.4	45.0	1.6	-2.4	4.1
876	625			25.6	44.8	45.6	0.7	-2.4	3.2
869	625			25.0	44.2	45.5	1.2	-2.4	3.7
1159	626			25.5	44.8	43.0	-1.8	-2.4	0.7
1161	626			24.9	44.1	43.0	-1.1	-2.4	1.3
1158	626			25.8	45.0	42.1	-3.0	-2.4	-0.5
1096	626			25.9	45.2	46.6	1.4	-2.4	3.9
1041	626			24.9	44.2	44.1	0.0	-2.4	2.4
895	629			25.9	45.2	41.2	-4.0	-2.4	-1.5
882	630			24.7	43.9	44.7	0.8	-2.4	3.2
865	631			25.1	44.3	45.1	0.7	-2.4	3.2
903	632			25.8	45.1	44.4	-0.7	-2.4	1.7
1203	633			25.7	45.0	45.0	0.0	-2.4	2.4
1154	633			25.7	44.9	47.4	2.4	-2.4	4.9
912	634			25.7	44.9	42.6	-2.4	-2.4	0.1
863	635			25.0	44.3	43.5	-0.7	-2.4	1.7
1009	635			24.6	43.9	47.1	3.2	-2.4	5.7
1213	635			24.1	43.4	46.7	3.4	-2.4	5.8
937	635			25.1	44.4	46.8	2.4	-2.4	4.9
1029	635			25.2	44.5	46.7	2.2	-2.4	4.7
1026	636			25.1	44.4	45.2	0.8	-2.4	3.2
1143	637			25.2	44.5	41.0	-3.5	-2.4	-1.1
929	637			25.5	44.8	49.4	4.6	-2.4	7.0
1105	638			25.9	45.2	45.4	0.3	-2.5	2.7
1190	641			25.9	45.2	35.7	-9.5	-2.5	-7.1
860	642			27.0	46.3	40.8	-5.5	-2.5	-3.1
998	643			26.2	45.5	43.3	-2.2	-2.5	0.2
861	645			24.4	43.7	43.0	-0.7	-2.5	1.7
314	645			25.0	44.3	42.2	-2.1	-2.5	0.4
838	650			25.4	44.7	44.8	0.1	-2.5	2.6
1144	651			25.9	45.2	35.6	-9.5	-2.5	-7.1
Average	630						0.1	-2.4	2.5

Table D.07 Tonality Assessment Table - 10 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
879	150			25.7	44.0	42.9	-1.1	-2.0	1.0
1005	151			24.4	42.7	39.8	-3.0	-2.0	-0.9
881	151			25.8	44.1	43.8	-0.3	-2.0	1.7
995	151			24.9	43.2	41.4	-1.8	-2.0	0.2
926	152			25.7	44.0	40.6	-3.5	-2.0	-1.5
1063	152			24.9	43.3	41.3	-2.0	-2.0	0.0
873	152			26.8	45.1	38.7	-6.3	-2.0	-4.3
507	153			25.9	44.2	38.6	-5.6	-2.0	-3.6
1093	153			25.3	43.6	36.6	-7.0	-2.0	-5.0
1099	153			25.1	43.5	42.0	-1.5	-2.0	0.6
1095	153			24.5	42.8	41.2	-1.6	-2.0	0.4
949	153			25.5	43.8	36.6	-7.3	-2.0	-5.2
1033	153			23.7	42.0	39.9	-2.2	-2.0	-0.1
1044	154			25.2	43.5	40.3	-3.2	-2.0	-1.2
919	154			26.7	45.0	38.9	-6.1	-2.0	-4.1
1027	154			25.3	43.6	40.1	-3.5	-2.0	-1.4
1084	154			24.4	42.7	40.8	-1.9	-2.0	0.1
1107	154			24.3	42.6	41.1	-1.5	-2.0	0.5
993	154			23.4	41.7	40.3	-1.3	-2.0	0.7
1061	154			24.4	42.7	42.1	-0.6	-2.0	1.4
922	154			25.5	43.9	40.6	-3.3	-2.0	-1.3
931	154			26.1	44.5	39.1	-5.3	-2.0	-3.3
1097	154			24.7	43.0	42.4	-0.6	-2.0	1.4
975	154			24.6	42.9	41.4	-1.6	-2.0	0.5
924	154			26.8	45.1	40.0	-5.1	-2.0	-3.1
1135	154			25.0	43.3	41.9	-1.3	-2.0	0.7
1149	154			22.8	41.2	41.8	0.6	-2.0	2.7
1082	154			24.1	42.4	40.2	-2.2	-2.0	-0.2
938	155			26.4	44.7	40.7	-4.0	-2.0	-1.9
1075	155			24.7	43.0	40.8	-2.2	-2.0	-0.2
952	155			24.5	42.8	39.6	-3.1	-2.0	-1.1
1074	155			25.6	43.9	41.4	-2.5	-2.0	-0.5
930	155			25.9	44.2	40.4	-3.8	-2.0	-1.8
878	155			24.8	43.1	40.7	-2.4	-2.0	-0.4
1085	155			25.1	43.4	41.3	-2.1	-2.0	-0.1
1011	155			24.4	42.7	40.1	-2.7	-2.0	-0.6
1078	155			24.4	42.7	40.2	-2.5	-2.0	-0.5
1132	155			25.0	43.3	39.8	-3.5	-2.0	-1.5
965	155			24.6	42.9	42.1	-0.8	-2.0	1.2
1059	155			25.8	44.2	41.9	-2.3	-2.0	-0.2
1098	155			24.5	42.8	42.6	-0.3	-2.0	1.8
1204	155			26.0	44.3	38.2	-6.1	-2.0	-4.1
877	155			25.2	43.5	40.4	-3.1	-2.0	-1.0
955	155			26.0	44.3	41.8	-2.5	-2.0	-0.5
1034	155			24.7	43.0	40.5	-2.5	-2.0	-0.5
1045	155			26.1	44.4	40.7	-3.7	-2.0	-1.7
1020	155			24.5	42.8	41.1	-1.7	-2.0	0.3
1007	155			24.6	43.0	41.1	-1.9	-2.0	0.2
1000	155			25.6	43.9	40.3	-3.6	-2.0	-1.6
1090	155			25.1	43.4	41.7	-1.7	-2.0	0.3
1006	155			25.4	43.7	39.8	-3.9	-2.0	-1.8
1130	155			24.1	42.4	40.7	-1.7	-2.0	0.3
1079	156			24.4	42.7	40.0	-2.7	-2.0	-0.7
1091	156			24.4	42.7	41.4	-1.2	-2.0	0.8
1088	156			26.2	44.6	38.5	-6.1	-2.0	-4.0
1157	156			25.3	43.6	38.6	-5.0	-2.0	-2.9
1146	156			25.3	43.6	40.4	-3.2	-2.0	-1.2
1133	157			23.8	42.1	39.3	-2.8	-2.0	-0.8
1025	157			24.1	42.4	41.1	-1.3	-2.0	0.7
840	157			27.1	45.4	40.6	-4.8	-2.0	-2.8
1214	157			25.2	43.5	40.8	-2.7	-2.0	-0.7
1010	158			25.4	43.7	40.2	-3.5	-2.0	-1.5
954	158			24.9	43.2	40.3	-2.9	-2.0	-0.9
901	158			25.9	44.2	38.7	-5.5	-2.0	-3.5
911	159			27.5	45.8	39.6	-6.2	-2.0	-4.2
1175	159			26.1	44.4	39.6	-4.8	-2.0	-2.7
1046	159			24.2	42.5	39.4	-3.1	-2.0	-1.1
1072	160			25.9	44.2	39.2	-5.0	-2.0	-3.0
1145	160			25.4	43.8	40.5	-3.2	-2.0	-1.2

Table D.07 Tonality Assessment Table - 10 m/s

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
886	160			26.8	45.1	43.9	-1.2	-2.0	0.8
1070	161			25.3	43.6	44.6	0.9	-2.0	3.0
Average	155						-2.6	-2.0	-0.6

Table D.07 Tonality Assessment Table - 10 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
993	620			25.6	44.9	41.9	-3.0	-2.4	-0.5
1084	620			24.6	43.9	43.6	-0.3	-2.4	2.1
1107	620			25.2	44.5	45.7	1.2	-2.4	3.6
1097	620			24.6	43.8	46.1	2.3	-2.4	4.8
1135	621			25.1	44.4	42.2	-2.2	-2.4	0.3
1063	621			24.9	44.1	43.0	-1.2	-2.4	1.3
1044	621			24.1	43.3	44.9	1.6	-2.4	4.0
1074	622			25.0	44.2	43.2	-1.0	-2.4	1.4
911	623			25.8	45.1	42.2	-2.9	-2.4	-0.4
975	623			26.3	45.5	43.3	-2.3	-2.4	0.2
1149	624			26.2	45.4	42.8	-2.6	-2.4	-0.2
1045	624			25.1	44.3	45.5	1.2	-2.4	3.6
879	624			25.1	44.3	41.0	-3.3	-2.4	-0.9
878	624			26.0	45.2	47.6	2.4	-2.4	4.9
1078	624			25.8	45.0	44.5	-0.6	-2.4	1.8
1007	624			24.4	43.7	41.4	-2.3	-2.4	0.1
1061	624			25.0	44.3	44.9	0.6	-2.4	3.0
919	624			23.9	43.1	42.2	-1.0	-2.4	1.5
877	624			26.2	45.4	48.0	2.6	-2.4	5.0
965	625			27.0	46.3	43.6	-2.6	-2.4	-0.2
1059	625			24.6	43.8	44.6	0.7	-2.4	3.2
881	625			24.9	44.2	41.5	-2.7	-2.4	-0.2
931	626			24.5	43.7	45.0	1.2	-2.4	3.7
938	626			24.5	43.8	44.9	1.1	-2.4	3.5
1075	627			24.9	44.2	45.3	1.1	-2.4	3.6
1132	627			25.4	44.6	38.3	-6.3	-2.4	-3.9
1020	627			25.4	44.7	42.6	-2.1	-2.4	0.4
1146	628			24.7	44.0	42.9	-1.1	-2.4	1.3
1000	628			24.8	44.1	42.5	-1.6	-2.4	0.8
1090	628			25.9	45.2	43.0	-2.2	-2.4	0.2
930	628			25.2	44.5	43.6	-0.9	-2.4	1.5
1006	629			25.2	44.4	44.1	-0.4	-2.4	2.1
1034	629			25.8	45.1	42.4	-2.7	-2.4	-0.2
1098	630			26.0	45.3	45.9	0.6	-2.4	3.1
1091	630			24.9	44.2	43.0	-1.2	-2.4	1.2
1085	631			24.9	44.2	44.0	-0.1	-2.4	2.3
1157	631			26.3	45.5	48.0	2.5	-2.4	4.9
952	631			24.9	44.2	42.3	-1.9	-2.4	0.6
1088	631			25.1	44.4	42.4	-2.0	-2.4	0.4
1046	632			25.5	44.8	43.7	-1.1	-2.4	1.4
922	632			25.7	45.0	45.7	0.8	-2.4	3.2
1214	633			24.9	44.2	46.0	1.8	-2.4	4.3
1133	633			26.3	45.5	41.5	-4.0	-2.4	-1.6
1145	633			25.4	44.7	43.4	-1.2	-2.4	1.2
1011	633			25.7	45.0	45.8	0.8	-2.4	3.2
1204	633			24.4	43.7	44.7	1.0	-2.4	3.5
840	634			25.2	44.5	44.5	0.0	-2.4	2.5
1175	634			25.2	44.4	42.2	-2.2	-2.4	0.2
1025	635			25.1	44.4	47.3	2.9	-2.4	5.3
924	635			25.8	45.0	43.5	-1.5	-2.4	0.9
955	635			26.5	45.7	46.1	0.4	-2.4	2.8
1072	636			26.1	45.4	42.5	-2.9	-2.4	-0.4
1010	636			25.4	44.7	44.2	-0.5	-2.4	2.0
954	637			26.8	46.1	43.8	-2.3	-2.4	0.1
901	638			25.1	44.4	39.3	-5.0	-2.5	-2.6
886	647			25.5	44.8	42.4	-2.4	-2.5	0.0
1070	652			25.8	45.2	41.6	-3.6	-2.5	-1.1
Average	629						-0.4	-2.4	2.0

Table D.08 Tonality Assessment Table - 10.5 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
1137	615			24.5	43.8	42.1	-1.7	-2.4	0.8
1115	616			24.2	43.4	43.4	0.0	-2.4	2.5
875	616			24.9	44.1	44.9	0.8	-2.4	3.2
935	617			25.8	45.0	42.1	-2.9	-2.4	-0.5
893	619			27.4	46.7	44.9	-1.7	-2.4	0.7
892	620			27.3	46.6	47.4	0.8	-2.4	3.2
944	620			25.1	44.4	43.8	-0.6	-2.4	1.9
1022	621			26.1	45.3	42.7	-2.7	-2.4	-0.2
994	621			25.6	44.8	41.8	-3.1	-2.4	-0.6
845	623			24.9	44.1	42.8	-1.3	-2.4	1.1
990	624			25.6	44.8	43.6	-1.2	-2.4	1.2
891	624			26.3	45.5	46.1	0.5	-2.4	3.0
989	624			26.3	45.5	43.3	-2.2	-2.4	0.2
983	624			26.2	45.5	44.1	-1.4	-2.4	1.0
971	624			26.3	45.5	43.1	-2.4	-2.4	0.0
967	624			26.0	45.2	42.8	-2.4	-2.4	0.0
957	624			25.8	45.1	41.6	-3.4	-2.4	-1.0
1018	624			24.8	44.1	43.4	-0.6	-2.4	1.8
1032	625			25.3	44.5	44.8	0.2	-2.4	2.7
888	625			25.5	44.8	46.8	2.1	-2.4	4.5
1031	625			26.0	45.2	44.4	-0.8	-2.4	1.6
988	625			26.3	45.5	43.2	-2.4	-2.4	0.1
1081	625			25.0	44.2	44.8	0.6	-2.4	3.1
1106	626			25.4	44.6	40.9	-3.7	-2.4	-1.3
978	626			25.7	44.9	45.3	0.4	-2.4	2.8
870	626			25.5	44.8	45.9	1.1	-2.4	3.5
902	626			25.3	44.6	44.8	0.3	-2.4	2.7
1165	626			24.3	43.6	42.3	-1.3	-2.4	1.2
1002	626			25.8	45.1	42.9	-2.1	-2.4	0.3
1015	627			25.0	44.2	41.9	-2.4	-2.4	0.0
1001	627			26.4	45.7	43.4	-2.3	-2.4	0.2
1089	627			25.5	44.8	43.2	-1.6	-2.4	0.8
1014	627			26.1	45.4	42.7	-2.7	-2.4	-0.2
987	627			26.4	45.6	42.4	-3.2	-2.4	-0.8
1028	628			25.3	44.5	42.3	-2.2	-2.4	0.2
1086	630			25.5	44.7	44.8	0.1	-2.4	2.6
1047	630			25.2	44.5	42.9	-1.6	-2.4	0.8
1131	630			25.1	44.4	39.5	-4.8	-2.4	-2.4
1016	631			25.5	44.8	43.6	-1.2	-2.4	1.3
1111	631			25.3	44.5	41.8	-2.8	-2.4	-0.3
868	631			26.2	45.4	45.4	0.0	-2.4	2.4
941	632			25.8	45.1	42.9	-2.2	-2.4	0.2
1110	632			25.0	44.3	42.7	-1.6	-2.4	0.8
1147	632			25.8	45.1	43.8	-1.3	-2.4	1.2
1012	633			25.9	45.2	46.8	1.7	-2.4	4.1
1060	634			26.2	45.5	44.8	-0.7	-2.4	1.8
1162	634			25.3	44.5	41.5	-3.0	-2.4	-0.5
925	635			25.6	44.8	45.6	0.7	-2.4	3.2
1210	636			26.2	45.4	34.1	-11.3	-2.4	-8.9
945	637			26.2	45.5	43.8	-1.7	-2.4	0.7
842	641			25.8	45.1	44.0	-1.1	-2.5	1.3
Average	627						-1.1	-2.4	1.3

Table D.09 Tonality Assessment Table - 11 m/s

Project: Jericho Wind Farm- Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/26/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
844	152			24.6	42.9	34.9	-8.0	-2.0	-6.0
1148	154			22.6	40.9	41.0	0.1	-2.0	2.2
963	154			26.1	44.4	41.5	-2.8	-2.0	-0.8
1094	154			24.3	42.6	41.0	-1.6	-2.0	0.4
1035	154			24.9	43.2	41.4	-1.9	-2.0	0.2
1092	154			24.6	42.9	39.7	-3.2	-2.0	-1.2
1077	154			25.4	43.7	39.3	-4.4	-2.0	-2.4
1017	155			25.1	43.4	41.7	-1.7	-2.0	0.3
959	155			26.3	44.6	41.7	-2.9	-2.0	-0.9
943	155			25.2	43.5	40.7	-2.8	-2.0	-0.8
1003	155			23.6	41.9	41.8	-0.1	-2.0	1.9
1042	155			25.23032177	43.5439708	40.89664	-2.6	-2.0	-0.6
979	155			24.2	42.5	41.3	-1.2	-2.0	0.8
964	155			25.2	43.6	41.3	-2.2	-2.0	-0.2
974	155			24.7	43.0	41.5	-1.5	-2.0	0.5
986	155			25.0	43.3	41.7	-1.6	-2.0	0.4
1080	155			24.2	42.5	40.7	-1.8	-2.0	0.2
889	155			24.2	42.5	39.9	-2.7	-2.0	-0.7
977	155			25.7	44.0	41.8	-2.2	-2.0	-0.2
1076	155			24.7	43.0	40.5	-2.5	-2.0	-0.5
956	156			26.4	44.8	37.6	-7.2	-2.0	-5.2
887	157			27.2	45.5	40.6	-5.0	-2.0	-3.0
866	157			27.2	45.5	40.2	-5.4	-2.0	-3.3
942	158			25.8	44.1	39.8	-4.3	-2.0	-2.3
1013	159			25.0	43.4	35.3	-8.0	-2.0	-6.0
Average	155						-2.7	-2.0	-0.6

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
844	615			24.8	44.0	44.1	0.1	-2.4	2.5
1035	620			24.8	44.0	44.7	0.7	-2.4	3.1
1092	621			25.6	44.8	44.3	-0.6	-2.4	1.9
1094	623			25.3	44.6	44.5	0.0	-2.4	2.4
986	623			25.7	44.9	44.5	-0.4	-2.4	2.1
1148	623			25.7	45.0	42.3	-2.7	-2.4	-0.2
963	624			26.1	45.4	43.3	-2.0	-2.4	0.4
964	624			26.6	45.9	44.6	-1.3	-2.4	1.1
1003	624			26.0	45.3	44.2	-1.1	-2.4	1.3
977	624			24.9	44.2	44.1	-0.1	-2.4	2.4
974	625			26.3	45.6	44.4	-1.2	-2.4	1.3
942	625			27.1	46.4	41.5	-4.9	-2.4	-2.4
1077	625			25.8	45.0	44.7	-0.3	-2.4	2.1
1080	626			24.9	44.2	43.8	-0.4	-2.4	2.0
943	626			25.9	45.1	44.8	-0.4	-2.4	2.1
1017	626			25.3	44.6	43.9	-0.7	-2.4	1.7
1042	627			25.9	45.2	44.8	-0.4	-2.4	2.0
979	627			26.5	45.8	42.6	-3.2	-2.4	-0.8
1076	628			25.1	44.4	43.1	-1.2	-2.4	1.2
1013	632			25.8	45.1	44.6	-0.5	-2.4	2.0
887	633			26.2	45.5	45.0	-0.5	-2.4	2.0
889	633			25.0	44.2	46.8	2.6	-2.4	5.0
959	635			26.2	45.5	48.8	3.3	-2.4	5.8
866	635			25.0	44.3	47.8	3.5	-2.4	6.0
956	636			25.5	44.8	44.8	0.0	-2.4	2.5
Average	626						-0.1	-2.4	2.3

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Appendix E
Measurement Data

Table E.01 Measurement data - Turbine ON

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 11/1/2017

***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	7.5	50.4	1036	322.8	325.9	1.5	13.0	7.1	5.4	2	99.1	46
2	7.0	48.7	848	322.8	325.9	1.4	12.1	6.5	4.9	2	99.1	46
3	6.6	47.1	705	322.8	325.9	1.3	11.4	4.9	5.0	2	99.1	47
4	6.2	46.4	574	322.8	325.9	1.4	10.6	5.4	4.9	2	99.1	47
5	5.9	45.0	508	322.8	325.9	1.2	10.3	5.9	5.7	2	99.1	47
6	6.0	44.6	519	322.8	325.9	1.0	10.5	5.6	6.2	2	99.1	47
7	6.2	46.3	602	322.8	325.9	0.9	10.9	5.9	7.2	2	99.1	47
8	6.9	47.0	804	322.8	325.9	0.8	12.1	6.6	7.0	2	99.1	47
9	7.5	49.1	1008	322.8	325.9	0.9	12.9	7.3	8.5	2	99.1	47
10	7.6	50.2	1080	322.8	325.9	1.0	13.3	7.1	6.9	2	99.1	47
11	7.4	50.2	973	322.8	325.9	1.3	12.7	6.5	6.2	2	99.1	47
12	7.2	48.6	925	322.8	325.9	1.2	12.5	6.9	6.0	2	99.1	47
13	7.4	49.0	992	322.8	325.9	1.0	12.8	6.9	6.1	2	99.1	47
14	7.7	50.0	1091	322.8	325.9	1.0	13.3	7.5	6.1	2	99.1	47
15	7.5	50.6	1026	322.8	325.9	1.3	13.0	6.8	5.6	2	99.1	45
16	7.3	49.3	950	322.8	325.9	1.2	12.6	6.8	5.6	2	99.1	44
17	7.6	49.3	1057	322.8	325.9	0.9	13.2	7.8	5.9	2	99.1	44
18	7.7	50.8	1112	322.8	325.9	1.0	13.4	8.0	6.7	2	99.1	44
19	7.7	50.3	1100	322.8	325.9	1.2	13.2	7.7	5.1	2	99.1	44
20	7.9	50.8	1187	322.8	325.9	0.9	13.6	7.2	5.3	2	99.1	44
21	8.0	50.7	1205	322.8	325.9	1.1	13.7	7.0	4.7	2	99.1	46
22	7.6	50.8	1046	322.8	325.9	1.4	13.0	6.7	4.6	2	99.1	47
23	7.2	48.7	912	322.8	325.9	1.3	12.5	6.3	7.2	2	99.1	47
24	6.8	48.0	772	322.8	325.9	1.3	11.8	5.8	7.2	2	99.2	47
25	6.3	46.4	605	322.8	325.9	1.5	10.8	6.1	6.8	2	99.1	47
26	6.2	46.6	579	322.8	325.9	1.0	10.8	6.8	6.5	2	99.1	47
27	6.7	47.7	731	322.8	325.9	0.8	11.7	7.3	6.1	2	99.1	46
28	7.0	48.6	820	322.8	325.9	1.3	12.1	6.5	6.4	2	99.1	46
29	6.9	48.8	801	322.8	325.9	1.7	12.0	6.3	6.1	2	99.1	46
30	6.7	48.1	728	322.8	325.9	1.7	11.5	6.2	7.0	2	99.1	46
31	6.8	48.1	786	322.8	325.9	0.6	11.9	7.0	7.3	2	99.1	46
32	7.4	49.3	986	322.8	325.9	0.3	12.9	8.2	7.3	2	99.1	46
33	7.8	50.7	1129	322.8	325.9	1.1	13.4	7.5	8.0	2	99.1	46
34	7.9	51.9	1178	322.8	325.9	1.2	13.6	7.6	7.8	2	99.1	46
35	7.6	51.1	1078	322.8	325.9	1.3	13.2	7.3	7.0	2	99.1	46
36	7.4	50.2	998	322.8	325.9	1.2	12.8	7.1	6.2	2	99.1	46
37	7.4	49.5	974	322.8	325.9	1.2	12.8	7.1	6.3	2	99.2	46
38	7.4	49.6	991	322.8	325.9	1.2	12.8	7.7	7.4	2	99.2	46
39	7.5	50.6	1013	322.8	325.9	1.2	12.9	7.1	6.6	2	99.2	45
40	7.5	50.9	1012	322.8	325.9	1.2	12.9	7.3	5.9	2	99.2	45
41	7.4	50.8	998	322.8	325.9	1.2	12.9	7.7	5.2	2	99.1	45
42	7.3	49.8	958	322.8	325.9	1.2	12.7	6.6	5.5	2	99.2	45
43	7.2	50.0	919	322.8	325.9	1.2	12.5	6.7	6.3	2	99.1	45
44	7.2	49.1	896	322.8	325.9	1.2	12.4	7.0	5.6	2	99.2	45
45	7.0	49.2	851	322.8	325.9	1.2	12.2	6.9	6.2	2	99.1	46
46			770	322.8	326.0	1.2	11.8	6.1	6.1	2	99.1	46
47			700	322.8	326.0	1.2	11.4	5.9	5.8	2	99.1	46
48			657	322.8	326.0	1.2	11.2	6.0	5.5	2	99.1	46
49	6.4	47.3	657	322.8	326.0	1.1	11.2	5.9	6.3	2	99.1	46
50	6.4	48.1	646	322.8	326.0	1.3	11.2	5.4	6.1	2	99.1	46
51	6.2	47.1	588	322.8	326.0	1.3	10.8	5.7	5.9	2	99.1	47
52	6.3	47.5	633	322.8	326.0	0.9	11.2	6.1	5.9	2	99.2	48
53			679	322.8	326.0	1.2	11.4	6.2	6.6	2	99.1	48
54			654	322.8	326.0	1.2	11.2	6.6	6.4	2	99.1	48
55			655	322.8	326.0	1.1	11.2	6.4	6.5	2	99.1	48
56			679	322.8	326.0	1.0	11.4	7.0	6.2	2	99.1	48
57			680	322.8	326.0	1.2	11.4	6.9	5.3	2	99.1	46
58			626	322.8	326.0	1.3	11.0	6.3	6.7	2	99.1	45
59			609	322.8	326.0	1.1	11.0	5.9	7.3	2	99.1	45
60			655	322.8	326.0	1.0	11.3	6.6	6.3	2	99.1	45
61			691	322.8	326.0	1.0	11.5	6.2	7.4	2	99.1	45
62	6.6	47.4	704	322.8	326.0	1.1	11.5	6.0	8.2	2	99.1	45
63	6.9	49.4	798	322.8	326.0	0.9	12.0	6.6	6.9	2	99.1	44
64	7.3	48.9	964	322.8	325.9	0.9	12.7	8.0	6.9	2	99.1	43
65	7.7	50.7	1098	322.8	325.9	0.9	13.3	7.8	7.0	2	99.1	43
66	7.6	51.4	1062	322.8	325.9	1.2	13.1	7.7	7.0	2	99.1	43
67	7.4	49.9	974	322.8	325.9	1.2	12.7	6.8	5.6	2	99.1	43
68	7.4	49.6	1005	322.8	325.9	1.1	12.9	7.8	7.1	2	99.1	43
69	7.5	50.3	1034	322.8	326.0	1.1	13.1	7.2	8.1	2	99.1	44
70	7.3	49.9	952	322.8	326.0	1.1	12.7	6.6	7.2	2	99.1	45
71	7.0	48.9	850	322.8	326.0	1.1	12.2	6.7	7.0	2	99.1	45
72	6.6	48.5	726	322.8	326.0	1.4	11.5	6.8	6.8	2	99.1	45
73	6.2	47.7	602	322.8	326.0	1.4	10.8	5.8	6.1	2	99.1	45
74	6.1	47.2	568	322.8	326.0	1.1	10.7	6.1	6.1	2	99.1	45
75	6.2	47.6	578	322.8	326.0	1.1	10.9	6.0	5.3	2	99.1	45
76	6.1	47.6	558	322.8	326.0	1.3	10.6	6.0	5.7	2	99.1	44
77	6.2	47.1	577	322.8	326.0	0.9	10.9	6.0	7.0	2	99.1	44
78	6.3	46.8	622	322.8	326.0	1.1	11.1	6.7	6.3	2	99.1	44
79	6.5	47.3	694	322.8	326.0	1.0	11.5	6.2	7.0	2	99.1	44
80	6.8	48.4	787	322.8	326.0	1.0	12.0	6.6	7.6	2	99.1	44
81	6.8	48.7	761	322.8	326.0	1.2	11.8	6.8	6.9	2	99.1	42
82	6.6	47.6	705	322.8	326.0	1.2	11.4	6.6	6.9	2	99.1	41
83	6.8	47.7	777	322.8	326.0	0.9	12.0	6.5	6.4	2	99.1	41
84	6.8	49.2	788	322.8	323.3	1.2	11.9	6.0	6.4	2	99.1	41
85	6.8	48.5	766	322.8	320.1	1.3	11.8	5.9	6.0	2	99.1	41
86	6.8	48.1	769	322.8	320.1	1.1	11.9	6.7	5.4	2	99.1	41
87	6.7	47.9	753	322.8	320.1	1.2	11.7	6.5	6.1	2	99.1	43
88	6.7	47.6	727	322.8	320.1	1.2	11.6	6.1	6.4	2	99.1	45

***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	6.6	47.4	701	322.8	320.1	1.2	11.4	6.6	5.5	2	99.1	45
90	6.6	47.6	701	322.8	320.1	1.2	11.5	6.4	5.4	2	99.1	45
91	6.6	47.5	723	322.8	320.1	1.2	11.6	6.4	4.6	2	99.1	45
92	6.8	47.8	772	322.8	320.1	1.2	11.8	6.2	5.1	2	99.1	45
93	7.2	48.5	906	322.8	316.8	0.9	12.5	6.8	5.0	2	99.1	45
94	7.2	50.2	926	322.8	309.7	1.2	12.6	7.5	6.4	2	99.1	46
95			848	322.8	307.4	1.3	12.2	5.9	8.3	2	99.1	46
96			975	322.8	307.4	0.9	12.6	6.8	7.3	2	99.1	46
97			1627	322.8	307.4	1.9	15.0	11.0	7.0	2	99.1	46
98			1608	322.8	307.4	6.3	15.3	10.5	6.5	2	99.1	46
99			1542	322.8	307.4	3.5	14.4	9.4	7.2	2	99.1	46
100			1626	322.8	307.4	2.6	14.7	9.1	7.7	2	99.1	46
101			1610	322.8	307.4	2.6	14.6	8.2	7.6	2	99.1	46
102			1603	322.8	307.4	1.0	14.5	9.7	8.3	2	99.1	46
103	8.8	52.7	1416	322.8	308.5	1.2	14.5	7.6	7.9	2	99.1	46
104	8.0	51.6	1203	322.8	314.9	1.6	13.6	7.2	7.1	2	99.1	46
105	7.9	51.3	1159	322.8	320.1	0.9	13.5	7.7	5.8	2	99.1	43
106	8.4	52.3	1321	322.8	320.1	0.3	14.1	7.9	5.5	2	99.1	42
107	8.2	51.8	1256	322.8	320.1	1.4	13.9	7.1	5.5	2	99.1	42
108	7.6	51.2	1071	322.8	320.1	1.3	13.1	7.1	5.4	2	99.1	42
109	7.3	49.5	931	322.8	320.1	1.3	12.6	7.5	6.3	2	99.1	42
110	6.8	48.6	789	322.8	320.1	1.3	11.9	6.6	5.7	2	99.1	42
111	6.4	47.5	647	322.8	320.1	1.3	11.1	5.8	5.8	2	99.2	42
112	6.1	46.8	544	322.8	320.1	1.3	10.5	5.3	5.6	2	99.2	42
113	6.0	46.1	520	322.8	320.1	1.1	10.4	5.4	5.0	2	99.2	42
114	6.1	46.5	543	322.8	320.1	1.0	10.7	6.0	4.3	2	99.2	42
115	6.0	47.3	519	322.8	320.1	1.3	10.4	6.6	5.5	2	99.2	42
116	5.5	46.0	408	322.8	320.1	1.6	9.8	5.6	6.2	2	99.2	42
117	5.1	44.8	295	322.8	320.1	1.7	9.5	5.5	5.5	2	99.2	44
118	4.9	45.0	258	322.8	320.1	1.9	9.5	5.5	7.0	2	99.2	45
119	5.1	45.3	315	322.8	320.1	1.9	9.5	5.4	7.3	2	99.2	45
120	5.2	45.0	324	322.8	320.1	1.7	9.5	5.5	8.1	2	99.2	45
121	5.5	45.5	400	322.8	320.1	1.3	9.6	5.4	6.2	2	99.2	45
122	5.5	45.5	405	322.8	320.1	1.1	9.7	5.5	5.7	2	99.2	45
123	5.5	45.9	402	322.8	320.1	1.2	9.6	5.5	5.6	2	99.2	46
124	5.7	45.6	447	322.8	320.1	1.0	9.9	5.6	6.3	2	99.2	46
125	6.5	47.3	692	322.8	320.1	0.8	11.5	8.1	6.1	2	99.2	46
126	7.8	49.9	1138	322.8	320.1	0.7	13.5	7.6	6.9	2	99.2	46
127	8.2	52.0	1266	322.8	320.1	1.6	14.0	8.0	7.1	2	99.2	46
128	7.8	51.3	1139	322.8	320.1	1.4	13.4	7.3	7.4	2	99.2	46
129	7.8	50.6	1126	322.8	320.1	1.1	13.4	7.5	5.6	2	99.2	43
130	7.9	51.4	1178	322.8	320.1	0.9	13.6	8.5	5.2	2	99.2	41
131	7.6	51.1	1047	322.8	320.1	1.4	13.1	7.1	5.3	2	99.2	41
132	6.9	49.0	815	322.8	320.1	1.5	11.9	6.8	6.1	2	99.2	41
133	6.6	47.2	726	322.8	320.1	1.2	11.5	7.3	5.6	2	99.2	41
134	7.0	47.8	838	322.8	320.1	0.9	12.2	7.9	5.3	2	99.2	41
135	7.5	49.3	1040	322.8	320.1	0.9	13.0	7.5	7.4	2	99.2	43
136	8.3	51.3	1289	322.8	320.1	0.8	14.1	7.5	6.1	2	99.1	44
137	8.0	51.7	1210	322.8	320.1	1.9	13.6	7.8	5.9	2	99.1	44
138	7.9	51.7	1170	322.8	320.1	1.1	13.5	7.7	5.5	2	99.1	44
139	8.1	51.1	1243	322.8	320.1	0.8	13.9	7.6	5.9	2	99.1	44
140	8.0	51.7	1224	322.8	320.1	1.1	13.8	7.7	5.6	2	99.1	44
141	7.7	51.2	1113	322.8	320.1	1.3	13.3	7.0	5.5	2	99.2	43
142	7.2	50.4	925	322.8	320.1	1.4	12.5	6.5	5.8	2	99.2	43
143	6.8	48.4	784	322.8	320.1	1.4	11.9	7.1	6.1	2	99.2	43
144	6.5	47.4	678	322.8	320.1	1.4	11.3	6.4	5.5	2	99.2	43
145	6.4	46.4	646	322.8	320.1	1.1	11.2	6.1	5.5	2	99.2	43
146	6.6	47.2	717	322.8	320.1	1.0	11.6	7.3	4.9	2	99.2	43
147	6.8	47.9	769	322.8	320.1	1.1	11.9	6.5	5.2	2	99.2	45
148	6.5	47.7	677	322.8	322.6	1.5	11.3	6.6	6.9	2	99.2	46
149	5.9	47.7	511	322.8	329.1	1.6	10.3	5.4	6.8	2	99.2	46
150	5.5	46.0	395	322.8	334.3	1.5	9.6	6.2	5.9	2	99.2	46
151	5.5	45.6	405	322.8	334.7	1.1	9.7	5.9	6.0	2	99.2	46
152	5.5	45.6	396	322.8	334.7	1.2	9.7	5.6	7.3	2	99.2	46
153	4.7	45.6	222	322.8	334.7	2.2	9.5	5.2	5.5	2	99.2	48
154	5.2	45.2	329	322.8	334.7	2.1	9.5	5.4	6.1	2	99.1	49
155	5.8	45.8	476	322.8	334.7	1.0	10.1	6.5	6.2	2	99.1	49
156	6.9	47.2	801	322.8	334.7	0.9	11.9	7.7	7.1	2	99.1	49
157	8.4	51.1	1332	322.8	334.7	0.9	14.2	8.8	7.2	2	99.1	49
158	8.6	52.0	1362	322.8	334.7	2.2	14.3	8.0	6.3	2	99.1	49
159	7.8	51.5	1152	322.8	334.7	1.7	13.4	7.2	7.1	2	99.2	46
160	7.5	51.1	1026	322.8	334.7	1.3	12.9	6.9	7.9	2	99.1	45
161	7.4	50.1	981	322.8	334.7	1.2	12.8	7.0	7.9	2	99.1	45
162	7.4	50.0	977	322.8	334.7	1.2	12.8	7.3	6.8	2	99.1	45
163	7.3	49.9	957	322.8	334.7	1.2	12.7	7.1	6.5	2	99.1	45
164	7.5	49.8	1013	322.8	334.7	1.1	13.0	7.2	6.0	2	99.1	45
165	7.6	50.8	1050	322.8	334.7	1.1	13.1	6.7	5.9	2	99.2	44
166	7.4	50.8	992	322.8	334.7	1.2	12.9	7.2	6.0	2	99.2	44
167	7.2	49.4	897	322.8	334.7	1.3	12.4	7.0	5.5	2	99.2	44
168	7.0	48.9	848	322.8	334.7	1.3	12.2	6.1	5.4	2	99.2	44
169	6.9	49.2	813	322.8	330.1	1.3	12.0	6.5	5.7	2	99.2	44
170	6.9	48.2	805	322.8	324.1	1.3	12.0	6.9	4.9	2	99.2	44
171	6.7	48.1	738	322.8	323.0	1.3	11.6	6.1	4.1	2	99.2	43
172	6.4	47.0	655	322.8	323.0	1.3	11.2	6.4	4.5	2	99.2	42
173	6.3	46.4	623	322.8	323.0	1.2	11.0	5.7	6.8	2	99.2	42
174	6.5	47.2	694	322.8	323.0	1.0	11.4	7.5	7.3	2	99.2	42
175	6.8	48.4	771	322.8	323.0	1.1	12.0	7.4	7.4	2	99.2	42
176	6.5	47.7	693	322.8	323.0	1.5	11.3	6.5	7.5	2	99.2	42

Table E.01 Measurement data - Turbine ON

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 11/1/2017

***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	6.8	47.0	772	322.8	323.0	0.9	11.8	7.1	6.9	2	99.2	42
178	7.8	50.1	1142	322.8	323.0	0.5	13.5	9.1	6.3	2	99.1	42
179	8.4	52.1	1333	322.8	323.0	1.2	14.3	7.3	5.4	2	99.1	42
180	7.7	51.5	1110	322.8	323.0	1.7	13.3	6.2	5.8	2	99.1	42
181	7.2	49.7	894	322.8	323.0	1.4	12.3	6.6	5.4	2	99.1	42
182	6.9	48.2	798	322.8	323.0	1.3	12.0	7.0	5.0	2	99.1	42
183	6.6	48.2	713	322.8	323.0	1.3	11.5	7.1	4.7	2	99.2	43
184	6.4	46.8	649	322.8	323.0	1.2	11.2	5.8	5.2	2	99.2	43
185	6.5	46.4	666	322.8	323.0	1.1	11.3	6.8	5.2	2	99.2	43
186	6.7	47.6	741	322.8	323.0	1.0	11.8	7.4	6.6	2	99.2	43
187	6.7	48.2	733	322.8	323.0	1.3	11.7	5.9	5.7	2	99.2	43
188	6.5	47.4	667	322.8	323.0	1.3	11.2	5.8	6.1	2	99.2	43
189	6.4	48.1	664	322.8	323.0	1.1	11.3	5.8	6.4	2	99.2	46
190	6.6	47.4	704	322.8	323.0	1.0	11.5	6.5	6.7	2	99.1	47
191	6.7	48.2	740	322.8	323.0	1.0	11.7	7.4	6.9	2	99.1	47
192	6.6	48.2	726	322.8	323.0	1.1	11.6	6.4	6.1	2	99.1	47
193	6.8	47.7	774	322.8	323.0	1.0	11.8	7.0	5.8	2	99.1	47
194	7.2	48.6	894	322.8	323.0	0.9	12.5	7.4	5.6	2	99.1	47
195	7.2	49.2	893	322.8	323.0	1.2	12.4	6.0	5.2	2	99.2	43
196	7.0	48.0	827	322.8	323.0	1.3	12.1	6.8	5.4	2	99.2	41
197	6.9	47.8	806	322.8	323.0	1.3	12.0	6.5	5.4	2	99.2	41
198	6.8	48.0	776	322.8	323.0	1.3	11.9	6.3	5.0	2	99.2	41
199	6.7	47.6	729	322.8	323.0	1.3	11.6	6.0	5.5	2	99.2	41
200	6.9	47.8	792	322.8	323.0	1.0	12.0	7.4	5.8	2	99.2	41
201	7.1	48.9	882	322.8	323.0	1.0	12.4	7.0	5.4	2	99.2	43
202	7.1	48.7	874	322.8	323.0	1.1	12.3	7.2	5.9	2	99.1	43
203	6.9	48.7	811	322.8	323.0	1.1	12.0	6.6	6.0	2	99.1	43
204	6.6	48.2	704	322.8	323.0	1.4	11.4	6.3	5.9	2	99.1	43
205	6.5	47.2	679	322.8	323.0	1.0	11.4	6.0	5.5	2	99.1	43
206	6.8	47.7	779	322.8	323.0	0.9	11.8	5.4	5.4	2	99.1	43
207	7.3	49.1	949	322.8	323.0	0.9	12.7	6.4	5.7	2	99.1	45
208	7.4	50.5	983	322.8	323.0	1.1	12.8	6.6	6.4	2	99.1	45
209	7.3	49.9	964	322.8	323.0	1.1	12.7	6.7	6.2	2	99.1	45
210	7.3	49.7	949	322.8	323.0	1.1	12.7	6.8	6.9	2	99.1	45
211	7.2	49.1	924	322.8	323.0	1.1	12.6	6.8	7.2	2	99.1	45
212	7.2	48.8	922	322.8	318.2	1.1	12.5	6.5	7.3	2	99.1	45
213	7.4	49.8	969	322.8	310.8	1.1	12.8	7.1	6.4	2	99.1	43
214			946	322.8	305.2	1.1	12.7	6.5	6.0	2	99.1	42
215			838	322.8	304.5	1.2	12.1	6.9	6.1	2	99.1	42
216			699	322.8	304.5	1.4	11.4	6.6	5.5	2	99.1	42
217			594	322.8	304.5	1.3	10.8	6.7	4.8	2	99.1	42
218			579	322.8	304.5	1.1	10.8	5.7	4.7	2	99.1	42
219			571	322.8	304.5	1.2	10.7	6.6	4.9	2	99.2	44
220			584	322.8	304.5	1.0	10.9	7.0	5.6	2	99.2	45
221			641	322.8	304.5	1.0	11.2	6.5	5.3	2	99.2	45
222			661	322.8	304.5	1.1	11.3	6.4	4.9	2	99.2	45
223			628	322.8	304.5	1.2	11.1	6.2	5.4	2	99.2	45
224			541	322.8	304.5	1.4	10.5	5.3	4.8	2	99.2	45
225			456	322.8	304.5	1.3	9.9	5.9	4.1	2	99.2	45
226			450	322.8	304.5	1.1	10.0	6.4	4.3	2	99.2	46
227			499	322.8	304.5	1.0	10.3	6.1	4.7	2	99.2	46
228			607	322.8	304.5	0.9	11.0	6.5	4.1	2	99.2	46
229			696	322.8	304.5	1.0	11.5	6.6	3.7	2	99.2	46
230			735	322.8	304.5	1.1	11.6	6.4	4.2	2	99.2	46
231			856	322.8	304.5	0.9	12.3	7.5	4.7	2	99.2	47
232			981	322.8	304.5	0.9	12.8	7.2	4.2	2	99.2	48
233			965	322.8	304.5	1.1	12.7	7.3	3.8	2	99.2	48
234			802	322.8	304.5	1.5	11.9	6.8	3.5	2	99.2	48
235			602	322.8	304.5	1.6	10.7	6.3	3.8	2	99.2	48
236			502	322.8	304.5	1.2	10.3	6.4	5.6	2	99.2	48
237			484	322.8	304.5	1.2	10.2	5.5	7.5	2	99.2	49
238			383	322.8	304.5	1.5	9.8	5.2	8.0	2	99.2	50
239			276	322.8	305.8	2.2	9.5	5.4	6.9	2	99.2	50
240	5.6	45.8	420	322.8	312.3	1.4	9.7	6.6	6.1	2	99.2	50
241	6.0	46.3	519	322.8	319.7	0.8	10.5	6.2	5.5	2	99.2	50
242	6.4	47.4	650	322.8	323.0	0.9	11.3	6.6	4.9	2	99.2	50
243	6.6	47.9	714	322.8	323.0	1.0	11.5	7.1	4.4	2	99.2	48
244	6.7	48.1	744	322.8	323.0	1.1	11.8	7.4	3.9	2	99.2	47
245	6.6	48.3	718	322.8	323.0	1.1	11.5	5.8	4.0	2	99.2	47
246	6.4	47.4	642	322.8	323.0	1.2	11.1	5.9	4.4	2	99.2	47
247	6.1	47.9	554	322.8	323.0	1.3	10.6	6.1	4.4	2	99.2	47
248	5.8	46.3	477	322.8	323.0	1.3	10.1	6.0	3.7	2	99.2	47
249	5.3	45.1	358	322.8	323.0	1.5	9.6	5.9	4.8	2	99.2	49
250	4.8	45.1	238	322.8	323.0	2.0	9.5	5.0	4.5	2	99.2	50
251	4.5	44.5	191	322.8	323.0	2.2	9.5	4.9	5.4	2	99.2	50
252	4.5	44.4	187	322.8	323.0	2.5	9.5	4.4	5.2	2	99.2	50
253	4.7	45.5	217	322.8	323.0	2.6	9.5	4.3	5.5	2	99.2	50
254	5.0	46.5	284	322.8	323.0	2.3	9.5	5.8	5.3	2	99.2	50
255	4.9	46.8	261	322.8	323.0	2.1	9.5	5.6	5.9	2	99.2	47
256	4.9	46.4	257	322.8	323.0	2.2	9.5	4.9	6.5	2	99.2	46
257	5.2	46.1	339	322.8	323.0	2.0	9.5	5.5	5.5	2	99.2	46
258	5.4	46.8	372	322.8	323.0	1.3	9.5	5.7	6.3	2	99.2	46
259	5.0	47.6	291	322.8	323.0	1.4	9.5	5.9	6.0	2	99.2	46
260	5.4	48.4	377	322.8	323.0	1.4	9.5	5.7	6.3	2	99.2	46
261	5.5	47.1	413	322.8	323.0	1.0	9.8	5.5	7.3	2	99.2	47
262	6.0	46.7	539	322.8	323.0	0.8	10.6	7.0	7.8	2	99.2	48
263	6.8	47.9	760	322.8	323.0	0.7	11.9	7.4	8.4	2	99.2	48
264	7.3	49.3	937	322.8	323.0	0.9	12.7	7.3	8.6	2	99.2	48

***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	7.4	49.9	999	322.8	323.0	1.0	12.9	7.8	7.8	2	99.2	48
266	7.5	50.2	1020	322.8	323.0	1.0	13.0	8.1	8.5	2	99.2	48
267	7.4	50.6	976	322.8	323.0	1.2	12.8	7.2	6.9	2	99.2	47
268	7.5	50.4	1009	322.8	323.0	1.0	12.9	6.1	7.0	2	99.2	46
269	7.5	50.3	1043	322.8	323.0	1.1	13.1	6.9	7.9	2	99.2	46
270	7.4	50.4	997	322.8	323.0	1.2	12.9	7.3	7.2	2	99.2	46
271	7.3	49.8	957	322.8	323.0	1.2	12.7	7.0	6.6	2	99.2	46
272	7.1	49.4	873	322.8	323.0	1.4	12.3	6.9	5.8	2	99.2	46
273	6.7	47.9	738	322.8	323.0	1.4	11.6	6.4	5.0	2	99.2	46
274	6.8	48.0	779	322.8	323.0	0.9	11.9	6.1	7.5	2	99.2	45
275	7.1	49.1	858	322.8	323.0	1.1	12.4	6.2	6.6	2	99.2	45
276	6.8	48.9	777	322.8	323.0	1.4	11.8	7.2	6.1	2	99.2	45
277	6.6	48.1	717	322.8	323.0	1.2	11.6	6.9	5.6	2	99.2	45
278	6.4	47.4	659	322.8	323.0	1.3	11.2	5.4	4.9	2	99.2	45
279	6.1	48.6	568	322.8	323.0	1.3	10.7	5.4	5.1	2	99.2	44
280	5.9	46.6	497	322.8	323.0	1.3	10.2	5.0	4.9	2	99.2	43
281	5.7	45.7	463	322.8	323.0	1.2	10.0	6.4	5.9	2	99.2	43
282	5.9	45.6	506	322.8	323.0	0.9	10.4	6.3	6.5	2	99.2	43
283	6.6	47.8	707	322.8	323.0	0.7	11.6	7.5	6.7	2	99.2	43
284	7.2	48.9	916	322.8	323.0	0.9	12.6	7.5	7.1	2	99.2	43
285	7.4	50.2	970	322.8	323.0	1.1	12.8	7.2	5.6	2	99.2	43
286	7.1	49.4	891	322.8	323.0	1.2	12.4	6.8	5.6	2	99.2	43
287	6.7	48.5	742	322.8	323.0	1.4	11.6	6.2	6.5	2	99.2	43
288	6.3	47.4	626	322.8	323.0	1.3	10.9	5.7	7.4	2	99.2	43
289	6.4	47.5	647	322.8	323.0	1.0	11.2	6.6	6.7	2	99.2	43
290	7.0	47.8	849	322.8	323.0	0.8	12.2	7.8	6.8	2	99.2	43
291	7.8	50.2	1149	322.8	323.0	0.8	13.6	7.9	6.6	2	99.2	45
292	7.7	51.1	1099	322.8	323.0	1.4	13.3	7.0	6.9	2	99.2	46
293	7.2	50.1	902	322.8	323.0	1.4	12.4	7.5	5.7	2	99.2	46
294	6.6	48.6	714	322.8	323.0	1.5	11.4	6.4	5.0	2	99.2	46
295	6.2	47.2	587	322.8	323.0	1.3	10.7	5.9	4.3	2	99.2	46
296	6.3	47.2	604	322.8	323.0	1.0	11.0	6.5	4.7	2	99.2	46
297	6.5	47.4	675	322.8	323.0	1.0	11.4	6.3	4.7	2	99.2	44
298	6.4	47.5	648	322.8	323.0	1.3	11.2	6.3	4.6	2	99.2	43
299	6.0	47.1	537	322.8	323.0	1.5	10.4	4.9	5.0	2	99.2	43
300	5.5	46.8	411	322.8	323.0	1.4	9.7	5.2	5.5	2	99.2	43
301	5.4	46.0	377	322.8	323.0	1.3	9.5	6.0	5.1	2	99.2	43
302	5.3	44.6	359	322.8	323.0	1.2	9.5	5.8	4.6	2	99.2	43
303	5.1	44.7	300	322.8	323.0	1.3	9.5	5.4	4.3	2	99.2	44
304	4.9	44.1	270	322.8	323.0	1.7	9.5	5.1	4.3	2	99.2	45
305	5.2	45.5	335	322.8	323.0	1.7	9.5	5.0	3.9	2	99.2	45
306	5.4	45.4	389	322.8	323.0	1.4	9.5	6.2	4.8	2	99.2	45
307	5.7	45.4	456	322.8	323.0	1.1	9.7	5.7	8.4	2	99.2	45
308	6.8	46.7	763	322.8	323.0	0.9	11.5	7.1	9.7	2	99.2	45
309	8.5	50.7	1340	322.8	323.0	0.6	14.1	7.9	9.0	2	99.2	43
310			1644	322.8	323.0	1.8	15.1	9.0	9.0	2	99.1	42
311			1629	322.8	323.0	2.2	15.0	8.9	8.8	2	99.1	42
312			1625	322.8	323.0	1.4	15.0	7.7	8.4	2	99.1	42
313			1633	322.8	322.5	1.6	15.1	7.0	7.0	2	99.1	42
314	9.6	53.7	1646	322.8	320.1	3.3	15.4	9.4	7.3	2	99.1	42
315			1607	322.8	320.1	3.6	15.2	7.8	6.8	2	99.2	41
316			1602	322.8	320.1	2.7	14.9	8.1	6.6	2	99.2	41
317			1580	322.8	320.1	1.8	14.6	8.1	7.2	2	99.2	41
318	8.6	51.8	1377	322.8	320.1	1.2	14.2	7.3	7.2	2	99.2	41
319	8.2	51.5	1270	322.8	320.1	1.4	13.9	7.3	7.8	2	99.2	41
320	8.3	51.7	1282	322.8	320.1	1.0	13.9	8.6	6.5	2	99.2	41
321	8.2	52.0	1277	322.8	320.1	1.3	14.0	7.5	5.5	2	99.2	41
322	7.9	51.6	1187	322.8	320.1	1.3	13.6	8.3	7.3	2	99.2	40
323	7.8	51.5	1135	322.8	320.1	1.1	13.4	7.7	6.9	2	99.2	40
324	7.5	51.1	1007	322.8	320.1	1.4	12.9	6.5	5.3	2	99.2	40
325	7.0	48.9	841	322.8	320.1	1.4	12.1	6.6	6.8	2	99.2	40
326	6.7	48.0	747	322.8	320.1	1.3	11.6	6.6	7.1	2	99.2	40
327	7.0	47.9	822	322.8	320.1	0.9	12.1	7.4	7.5	2	99.2	41
328	7.4	48.8	975	322.8	320.1	1.0	12.8	7.3	7.4	2	99.1	42
329	7.7	50.6	1118	322.8	320.1	1.0	13.4	7.0	5.8	2	99.1	42
330	7.9	51.2	1166	322.8	320.1	1.3	13.6	7.2	5.8	2	99.1	42
331	7.7	51.1	1108	322.8	320.1	1.2	13.3	6.7	6.5	2	99.1	42
332	7.7	50.5	1083	322.8	320.1	1.1	13.2	7.4	6.5	2	99.1	42
333	7.5	50.4	1038	322.8	320.1	1.1	13.0	8.0	6.5	2	99.2	42
334	7.3	49.9	952	322.8	320.1	1.1	12.7	7.2	6.9	2	99.2	43
335	7.0	48.8	845	322.8	320.1	1.1	12.2	6.8	7.0	2	99.2	43
336	6.8	48.3	768	322.8	320.1	1.1	11.8	6.3	6.9	2	99.2	43
337	6.7	48.2	752	322.8	320.1	1.1	11.7	6.8	6.1	2	99.2	43
338	6.9	47.9	797	322.8	320.1	1.1	12.0	6.9	8.0	2	99.2	43
339	7.0	48.6	847	322.8	320.1	1.1	12.2	6.6	7.0	2	99.2	43
340	7.2	48.6	896	322.8	320.1	1.1	12.4	7.1	6.4	2	99.2	43
341	7.7	50.2	1108	322.8	320.1	0.8	13.3	8.3	6.9	2	99.2	43
342	8.1	51.4	1244	322.8	320.1	1.3	13.8	7.4	7.1	2	99.2	43
343			1277	322.8	320.1	1.5	14.0	7.4	6.3	2	99.2	43
344			1009	322.8	320.1	2.2	13.9	7.7	6.4	2	99.2	43
345			459	322.8	320.1	11.2	12.8	5.7	6.8	2	99.2	44
346			201	322.8	320.1	16.1	10.1	6.6	6.7	2	99.2	44
347			100	322.8	320.1	22.8	7.6	7.1	6.0	2	99.2	44
348			100	322.8	320.1	25.6	6.0	6.3	5.6	2	99.2	44
349			100	322.8	320.1	34.9	4.5	6.1	6.7	2	99.2	44
350			100	322.8	320.1	49.9	2.8	6.7	6.9	2	99.2	44
351			100	322.8	320.1	61.9	1.7	6.8	5.5	2	99.2	43
352			100	322.8	320.1	60.3	1.6	7.8	6.9	2	99.2	43

Table E.01 Measurement data - Turbine ON

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 11/1/2017

***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			100	322.8	320.1	60.3	1.6	6.3	7.7	2	99.2	43
354			100	322.8	320.1	60.3	1.4	6.6	6.8	2	99.2	43
355			100	322.8	320.1	60.3	1.4	7.0	6.7	2	99.2	43
356			100	322.8	320.1	60.3	1.5	6.1	7.5	2	99.2	43
357			100	322.8	320.1	60.3	1.4	6.3	7.3	2	99.2	42
358			100	322.8	320.1	60.3	1.4	6.3	7.0	2	99.2	42
359			100	322.8	320.1	60.3	1.5	7.3	6.6	2	99.2	42
360			100	322.8	320.1	60.3	1.5	6.7	6.7	2	99.2	42
361			100	322.8	320.1	60.2	1.5	6.8	7.1	2	99.2	42
362			100	322.8	320.1	53.3	1.6	6.5	8.6	2	99.2	42
363			100	322.8	320.1	37.5	2.2	6.3	8.9	2	99.2	43
364			100	322.8	320.1	17.4	4.0	6.8	8.3	2	99.2	44
365			100	322.8	320.1	10.7	7.6	6.4	6.9	2	99.2	44
366			100	322.8	320.1	15.4	8.9	6.6	6.6	2	99.2	44
367			100	322.8	320.1	14.7	9.7	7.1	8.3	2	99.2	44
368			100	322.8	320.1	15.6	9.7	6.6	7.3	2	99.2	44
369			100	322.8	316.9	15.8	9.7	7.3	6.9	2	99.2	44
370			102	322.8	310.8	15.3	9.6	6.8	6.7	2	99.2	45
371			361	322.8	310.3	2.6	11.9	8.4	5.9	2	99.2	45
372			648	322.8	310.3	7.7	14.0	7.1	6.0	2	99.2	45
373			614	322.8	310.3	8.3	12.6	6.6	6.0	2	99.2	45
374			803	322.8	310.3	6.1	11.8	7.4	5.7	2	99.2	45
375			906	322.8	310.3	1.6	11.4	8.9	5.6	2	99.2	44
376	7.2	48.5	894	322.8	310.3	0.9	12.6	8.1	5.5	2	99.2	44
377	7.2	49.3	927	322.8	310.3	1.2	12.6	7.6	4.9	2	99.2	44
378	6.9	48.7	801	322.8	310.3	1.3	11.9	6.9	5.1	2	99.2	44
379	6.5	47.5	673	322.8	310.3	1.3	11.2	6.1	6.4	2	99.2	44
380	6.2	46.6	603	322.8	310.3	1.2	10.9	5.7	6.9	2	99.2	44
381	6.1	46.3	559	322.8	310.3	1.3	10.6	5.9	6.0	2	99.2	44
382	6.2	46.3	577	322.8	310.3	1.0	10.7	6.5	7.2	2	99.2	44
383	7.0	47.6	833	322.8	310.3	0.6	12.2	8.9	7.2	2	99.2	44
384	7.8	50.8	1150	322.8	310.3	0.9	13.6	8.0	6.7	2	99.2	44
385	8.1	52.0	1246	322.8	310.3	1.3	13.8	7.4	7.0	2	99.2	44
386	8.4	52.0	1321	322.8	310.3	1.1	14.1	8.1	7.0	2	99.2	44
387	8.5	51.7	1352	322.8	310.3	1.2	14.2	8.8	6.0	2	99.2	44
388	8.1	51.5	1232	322.8	310.3	1.4	13.8	7.2	5.9	2	99.2	44
389	7.9	51.9	1186	322.8	310.3	1.1	13.6	8.7	5.3	2	99.2	44
390	7.7	52.0	1102	322.8	310.3	1.3	13.3	7.6	4.8	2	99.2	44
391	7.0	50.1	827	322.8	310.3	1.6	12.0	5.7	5.8	2	99.2	44
392	6.3	47.7	608	322.8	310.3	1.5	10.8	6.8	7.5	2	99.2	44
393	6.1	47.2	565	322.8	310.3	1.1	10.7	6.8	6.8	2	99.2	43
394	6.3	46.7	607	322.8	310.3	1.0	11.0	6.5	6.0	2	99.2	43
395	6.4	47.4	653	322.8	310.3	1.1	11.2	6.1	6.6	2	99.2	43
396	6.6	47.8	704	322.8	310.3	1.1	11.7	6.5	7.6	2	99.2	43
397	6.4	47.6	640	322.8	310.3	1.6	10.9	5.5	6.8	2	99.2	43
398	6.4	47.9	642	322.8	310.3	0.9	11.1	6.7	6.3	2	99.2	43
399	6.9	48.0	818	322.8	310.3	0.9	12.1	6.6	6.3	2	99.2	43
400	7.2	49.1	908	322.8	310.3	1.0	12.5	7.6	4.6	2	99.2	43
401	7.1	48.7	856	322.8	310.3	1.2	12.2	6.6	3.6	2	99.2	43
402	6.8	48.5	775	322.8	310.3	1.2	11.9	6.3	3.3	2	99.2	43
403	6.5	47.6	689	322.8	310.3	1.2	11.4	6.4	4.4	2	99.2	43
404	6.2	47.1	584	322.8	310.3	1.4	10.7	5.8	4.0	2	99.2	43
405	6.0	46.7	538	322.8	310.4	1.1	10.5	6.0	4.5	2	99.2	45
406	6.4	47.1	652	322.8	313.2	0.8	11.2	7.1	6.9	2	99.2	46
407	7.1	48.2	882	322.8	313.2	0.8	12.5	7.1	7.0	2	99.2	46
408	7.4	50.0	982	322.8	313.2	1.1	12.8	7.1	6.8	2	99.2	46
409	7.5	49.6	1026	322.8	313.2	1.1	13.0	8.5	5.1	2	99.2	46
410	7.6	50.4	1067	322.8	313.2	1.1	13.1	7.1	4.7	2	99.2	46
411	8.2	51.4	1270	322.8	313.2	0.5	14.0	7.6	6.6	2	99.2	48
412	8.2	51.7	1280	322.8	313.2	1.4	14.0	7.4	7.3	2	99.2	50
413	7.9	51.7	1165	322.8	313.2	1.4	13.5	7.8	5.9	2	99.2	50
414	7.9	51.4	1165	322.8	313.2	1.0	13.6	7.3	5.4	2	99.2	50
415	7.6	51.0	1065	322.8	313.2	1.3	13.1	6.5	5.5	2	99.2	50
416	7.3	49.9	948	322.8	313.2	1.3	12.6	6.6	5.8	2	99.2	50
417	7.0	49.1	850	322.8	313.2	1.2	12.2	6.9	6.6	2	99.2	45
418	6.7	48.3	740	322.8	313.2	1.2	11.6	5.9	6.0	2	99.2	43
419	6.5	47.3	676	322.8	313.2	1.2	11.3	6.1	6.3	2	99.2	43
420	6.3	47.2	626	322.8	313.2	1.2	11.0	5.6	5.3	2	99.2	43
421	6.3	47.3	614	322.8	313.2	1.1	11.0	6.2	5.0	2	99.2	43
422	6.3	47.5	620	322.8	313.2	1.2	11.1	5.3	3.7	2	99.2	43
423	6.1	46.9	566	322.8	313.2	1.4	10.6	5.9	4.7	2	99.2	44
424	6.0	46.7	526	322.8	313.2	1.1	10.5	6.3	4.4	2	99.2	45
425	5.9	47.0	506	322.8	313.2	1.2	10.4	5.5	4.7	2	99.2	45
426	5.7	45.9	455	322.8	313.2	1.3	10.0	5.7	5.5	2	99.2	45
427	5.5	44.7	414	322.8	313.2	1.2	9.7	5.6	5.7	2	99.2	45
428	5.6	45.3	426	322.8	313.2	1.0	9.9	5.6	5.7	2	99.2	45
429	5.7	45.7	460	322.8	313.2	1.0	10.0	5.7	6.8	2	99.2	47
430	6.2	46.8	583	322.8	313.2	0.7	10.9	6.6	7.0	2	99.2	48
431	6.5	47.7	693	322.8	313.2	1.1	11.5	6.7	7.0	2	99.2	48
432	6.5	47.5	671	322.8	313.2	1.2	11.2	6.0	7.5	2	99.2	48
433	6.6	47.3	721	322.8	313.2	0.9	11.6	6.8	6.8	2	99.2	48
434	6.9	48.3	798	322.8	313.2	1.1	12.0	6.4	6.6	2	99.2	48
435	6.9	48.5	800	322.8	313.2	1.1	12.0	6.7	6.1	2	99.2	46
436	6.7	48.2	748	322.8	313.1	1.1	11.7	6.0	5.7	2	99.2	45
437	6.6	48.1	713	322.8	308.0	1.1	11.5	5.9	6.4	2	99.2	45
438			777	322.8	301.6	1.1	11.9	7.2	6.7	2	99.2	45
439			821	322.8	298.6	1.1	12.1	7.2	7.0	2	99.2	45
440			759	322.8	298.6	1.2	11.7	6.0	7.7	2	99.2	45

***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			709	322.8	298.6	1.2	11.5	5.9	6.3	2	99.2	44
442			690	322.8	298.6	1.2	11.5	6.2	6.1	2	99.2	44
443			650	322.8	298.6	1.2	11.2	5.5	5.0	2	99.2	44
444			648	322.8	298.6	1.1	11.2	6.6	4.8	2	99.2	44
445			676	322.8	298.6	1.0	11.4	6.9	4.8	2	99.2	44
446			659	322.8	298.6	1.2	11.3	6.0	4.1	2	99.2	44
447			597	322.8	298.6	1.3	10.8	5.1	4.9	2	99.2	46
448			629	322.8	298.6	0.9	11.1	6.4	5.4	2	99.2	47
449			685	322.8	298.6	1.2	11.5	5.8	6.3	2	99.2	47
450			706	322.8	298.6	1.0	11.5	6.5	5.8	2	99.2	47
451			684	322.8	298.6	1.2	11.4	6.0	4.6	2	99.2	47
452			611	322.8	298.6	1.2	11.0	6.7	4.8	2	99.2	47
453			619	322.8	298.6	1.0	11.0	5.4	4.5	2	99.2	47
454			650	322.8	298.6	1.1	11.3	6.9	5.2	2	99.2	46
455			590	322.8	298.6	1.4	10.8	6.7	6.7	2	99.2	46
456			508	322.8	298.6	1.3	10.3	6.8	8.5	2	99.2	46
457			472	322.8	298.6	1.2	10.1	6.2	7.0	2	99.2	46
458	6.2	46.2	578	322.8	310.4	1.1	10.8	7.1	6.2	3	99.2	44
459	6.2	46.3	599	322.8	310.4	1.1	11.0	6.1	6.7	3	99.2	44
460	6.5	46.9	683	322.8	310.4	1.0	11.4	6.1	6.4	3	99.2	44
461	7.2	48.4	893	322.8	310.4	0.9	12.4	8.0	6.7	3	99.2	44
462	7.8	50.5	1158	322.8	310.4	0.9	13.6	8.7	6.6	3	99.2	44
463	7.8	51.1	1146	322.8	310.4	1.5	13.5	8.7	6.9	3	99.2	44
464	7.8	50.8	1145	322.8	310.4	1.2	13.4	8.3	6.4	3	99.2	44
465	8.7	51.6	1411	322.8	310.4	0.6	14.5	8.0	6.9	3	99.2	44
466	9.4	52.5	1555	322.8	310.4	1.2	14.9	9.2	7.5	3	99.2	43
467			1558	322.8	310.4	1.5	14.9	8.6	7.6	3	99.2	43
468	8.7	52.3	1412	322.8	310.4	1.2	14.4	7.3	5.2	3	99.2	43
469	8.3	51.2	1296	322.8	310.4	1.2	14.0	7.7	5.5	3	99.2	43
470	8.2	51.8	1272	322.8	310.4	1.0	13.9	8.3	4.8	3	99.2	43
471	8.5	51.7	1342	322.8	310.4	0.9	14.2	8.4	5.7	3	99.2	43
472	8.8	52.2	1432	322.8	310.4	1.0	14.6	7.5	5.7	3	99.2	46
473	8.3	52.0	1295	322.8	310.4	1.6	14.0	7.2	5.7	3	99.2	46
474	7.9	51.5	1159	322.8	310.4	1.3	13.5	7.4	5.8	3	99.2	46
475	7.7	51.4	1090	322.8	310.4	1.2	13.2	7.1	6.0	3	99.2	46
476	7.9	51.6	1171	322.8	310.4	0.9	13.6	7.4	5.4	3	99.2	46
477	7.7	51.7	1119	322.8	310.4	1.3	13.4	7.1	5.9	3	99.2	46
478	7.3	50.5	933	322.8	310.4	1.4	12.6	6.7	5.8	3	99.2	44
479	6.7	48.4	751	322.8	310.4	1.3	11.7	6.6	4.9	3	99.2	44
480	6.2	46.5	587	322.8	310.4	1.4	10.7	5.8	4.8	3	99.2	44
481	5.7	46.3	446	322.8	310.4	1.5	9.9	5.7	4.7	3	99.2	44
482	5.2	45.3	318	322.8	310.4	1.7	9.5	5.5	4.1	3	99.2	44
483	5.5	45.9	401	322.8	310.4	1.2	9.7	5.0	3.2	3	99.2	44
484	5.6	45.9	422	322.8	310.4	1.1	9.9	5.7	4.2	3	99.2	44
485	5.6	45.3	434	322.8	310.4	1.1	9.8	5.7	4.6	3	99.2	44
486	6.0	46.6	526	322.8	310.4	0.8	10.5	6.5	5.3	3	99.2	44
487	6.7	47.8	746	322.8	310.4	0.7	11.9	7.5	9.3	3	99.2	44
488	7.2	48.9	899	322.8	310.4	1.0	12.5	6.8	9.4	3	99.2	44
489	7.2	49.9	925	322.8	310.4	1.1	12.6	6.6	6.9	3	99.2	44
490	7.4	49.8	991	322.8	310.4	1.0	12.8	7.6	6.9	3	99.2	46
491	7.9	51.3	1177	322.8	310.4	0.7	13.6	7.3	7.8	3	99.2	46
492	8.2	52.5	1277	322.8	310.4	1.1	14.0	8.5	6.5	3	99.2	46
493	7.8	52.1	1151	322.8	310.4	1.5	13.5	7.3	6.1	3	99.2	46
494	7.4	50.8	978	322.8	310.4	1.3	12.7	6.8	6.8	3	99.2	46
495	7.2	49.6	897	322.8	310.4	1.2	12.4	7.4	7.1	3	99.2	46
496	7.2	49.3	919	322.8	310.4	1.1	12.5	7.7	6.0	3	99.2	44
497	7.4	50.0	985	322.8	310.4	1.0	12.8	7.8	5.5	3	99.2	44
498	7.6	51.0	1059	322.8	310.4	1.0	13.2	7.8	5.3	3	99.2	44
499	7.7	52.1	1098	322.8	310.4	1.1	13.3	8.5	4.6	3	99.2	44
500	7.4	51.1	976	322.8	310.4	1.4	12.8	6.9	3.2	3	99.2	44
501	6.9	49.0	794	322.8	310.4	1.4	11.9	5.7	5.8	3	99.2	44
502	6.5	47.7	689	322.8	310.4	1.4	11.4	6.2	6.5	3	99.1	45
503	6.3	48.0	633	322.8	310.4	1.3	11.1	5.5	7.1	3	99.1	45
504	6.3	47.4	622	322.8	310.4	1.1	11.0	5.5	5.9	3	99.1	45
505	6.8	47.8	773	322.8	310.4	0.8	11.9	6.9	7.1	3	99.1	45
506	7.9	50.0	1176	322.8	310.4	0.4	13.6	8.1	7.6	3	99.1	45
507	10.0	52.5	1534	322.8	310.4	0.8	14.7	9.8	6.1	3	99.1	45
508	8.1	52.3	1245	322.8	310.4	2.2	13.8	7.8	5.9	3	99.1	44
509	7.6	51.4	1076	322.8	310.4	1.2	13.2	7.4	4.8	3	99.1	44
510	7.5	50.9	1014	322.8	310.4	1.2	13.0	7.4	4.7	3	99.1	44
511	7.2	50.1	902	322.8	310.4	1.2	12.4	6.2	5.0	3	99.1	44
512	6.8	49.0	772	322.8	310.4	1.2	11.8	6.8	4.4	3	99.2	44
513	6.3	47.4	618	322.8	310.4	1.5	10.9	6.3	4.9	3	99.2	44
514	5.5	46.1	405	322.8	310.4	1.7	9.8	5.5	5.5	3	99.2	43
515	5.0	45.2	287	322.8	310.4	1.7	9.5	5.4	6.7	3	99.2	43
516	5.0	45.1	291	322.8	310.4	1.8	9.5	5.3	7.3	3	99.2	43
517	5.2	45.3	337	322.8	310.4	1.7	9.5	5.8	6.8	3	99.2	43
518	5.4	44.9	389	322.8	310.4	1.3	9.5	5.4	7.8	3	99.2	43
519	5.6	45.3	423	322.8	310.4	1.0	9.8	5.8	7.3	3	99.2	43
520	6.7	46.7	735	322.8	310.4	0.9	11.6	8.2	7.4	3	99.2	43
521	7.6	50.2	1082	322.8	310.4	0.8	13.4	8.7	6.9	3	99.2	43
522	7.9	53.0	1183	322.8	310.4	1.2	13.7	8.1	6.1	3	99.2	43
523	7.8	51.3	1122	322.8	310.4	1.2	13.4	8.2	5.9	3	99.2	43
524	7.7	50.7	1084	322.8	310.4	1.2	13.2	7.5	6.1	3	99.2	43
525	7.5	50.6	1019	322.8	310.4	1.2	13.0	7.0	6.0	3	99.2	43
526	7.1	49.7	884	322.8	310.4	1.3	12.3	6.8	5.9	3	99.2	44
527	6.8	48.5	787	322.8	310.4	1.2	11.9	5.7	5.8	3	99.2	44
528	6.7	47.5	744	322.8	310.4	1.2	11.7	6.8	5.9	3	99.2	44

Table E.01 Measurement data - Turbine ON

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 11/1/2017

***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	6.6	48.0	721	322.8	310.4	1.2	11.6	6.4	5.6	3	99.2	44
530	6.5	47.5	678	322.8	310.4	1.2	11.3	6.6	5.9	3	99.2	44
531	6.3	47.1	632	322.8	310.4	1.2	11.1	6.8	5.5	3	99.2	44
532	6.6	46.9	722	322.8	310.4	0.9	11.5	7.8	7.4	3	99.2	46
533	7.4	49.2	1006	322.8	310.4	0.8	13.0	8.2	7.0	3	99.2	46
534	8.5	51.7	1340	322.8	310.4	0.7	14.2	9.5	5.5	3	99.2	46
535	8.7	52.8	1406	322.8	310.4	1.5	14.5	8.1	6.5	3	99.2	46
536	8.1	51.9	1251	322.8	310.4	1.8	13.8	7.2	6.4	3	99.2	46
537	8.6	52.0	1364	322.8	315.8	0.1	14.3	8.6	5.5	3	99.2	46
538	8.6	52.4	1375	322.8	320.1	1.1	14.3	7.8	5.3	3	99.2	46
539	8.1	51.7	1238	322.8	320.1	1.5	13.8	8.2	6.6	3	99.2	46
540	7.9	51.3	1172	322.8	320.1	1.2	13.5	7.5	7.1	3	99.2	46
541	7.9	51.7	1171	322.8	320.1	1.0	13.6	7.9	6.3	3	99.2	46
542	7.5	51.1	1043	322.8	320.1	1.3	13.1	7.7	5.5	3	99.2	46
543	7.1	49.6	857	322.8	320.1	1.4	12.2	6.6	5.3	3	99.2	46
544	6.6	47.8	718	322.8	320.1	1.4	11.5	5.7	5.4	3	99.2	43
545	6.3	47.1	625	322.8	320.1	1.3	11.1	5.9	5.0	3	99.2	43
546	6.0	46.6	520	322.8	320.1	1.6	10.3	5.5	4.4	3	99.2	43
547	5.5	45.3	409	322.8	320.1	1.4	9.6	5.2	3.9	3	99.2	43
548	5.5	44.8	394	322.8	320.1	1.2	9.6	5.9	3.6	3	99.2	43
549	5.6	44.9	430	322.8	320.1	0.9	10.0	6.7	3.4	3	99.2	43
550	5.8	45.9	474	322.8	320.1	1.1	10.2	5.5	3.8	3	99.2	43
551	5.9	46.6	490	322.8	320.1	1.1	10.3	5.6	5.0	3	99.2	43
552	6.1	47.4	553	322.8	320.1	0.9	10.7	7.1	6.7	3	99.2	43
553	6.7	47.5	731	322.8	320.1	0.8	11.8	9.1	8.2	3	99.2	43
554	6.8	48.5	768	322.8	320.1	1.3	11.9	7.4	7.1	3	99.2	43
555	6.4	46.9	665	322.8	320.1	1.4	11.1	6.3	6.0	3	99.2	43
556	7.0	47.7	831	322.8	320.1	0.9	12.1	7.4	6.1	3	99.2	44
557	7.7	50.7	1092	322.8	320.1	1.0	13.4	7.5	5.9	3	99.2	44
558	7.6	51.3	1081	322.8	320.1	1.1	13.2	6.9	6.1	3	99.2	44
559	7.4	50.5	981	322.8	320.1	1.2	12.8	7.3	5.5	3	99.2	44
560	6.9	49.3	802	322.8	320.1	1.5	11.9	6.3	5.0	3	99.2	44
561	6.3	47.5	622	322.8	320.1	1.5	10.9	6.3	5.0	3	99.2	44
562	6.0	46.6	515	322.8	320.1	1.4	10.3	5.9	5.0	3	99.2	44
563	5.8	45.9	468	322.8	320.1	1.2	10.1	6.4	5.4	3	99.2	44
564	5.8	46.6	474	322.8	320.1	1.1	10.2	6.1	4.9	3	99.2	44
565	5.6	46.9	426	322.8	320.1	1.4	9.9	6.1	4.8	3	99.2	44
566	4.8	45.9	237	322.8	320.1	2.2	9.5	4.9	5.1	3	99.2	44
567	4.8	45.3	252	322.8	320.1	2.2	9.5	5.1	4.9	3	99.2	44
568	5.5	44.6	398	322.8	320.1	1.6	9.7	5.4	5.2	3	99.2	47
569	6.1	46.5	547	322.8	320.1	0.7	10.8	6.7	5.0	3	99.2	47
570	6.7	47.9	734	322.8	320.1	0.8	11.8	6.8	6.1	3	99.2	47
571	6.9	49.0	816	322.8	320.1	1.1	12.1	6.2	6.0	3	99.2	47
572	6.9	48.6	802	322.8	320.1	1.2	12.1	6.2	7.1	3	99.2	47
573	6.7	48.0	730	322.8	320.1	1.3	11.6	5.8	6.9	3	99.2	47
574	6.7	48.0	736	322.8	320.1	1.1	11.7	6.1	5.8	3	99.2	44
575	6.7	48.3	739	322.8	320.1	1.1	11.7	6.1	5.9	3	99.2	44
576	6.4	47.3	647	322.8	320.1	1.4	11.1	6.1	5.9	3	99.2	44
577	6.1	47.1	553	322.8	320.1	1.3	10.6	5.5	5.5	3	99.2	44
578	5.9	46.3	513	322.8	320.1	1.2	10.4	5.9	4.2	3	99.2	44
579	6.1	47.0	560	322.8	320.1	1.0	10.8	6.0	4.9	3	99.2	44
580	6.3	46.8	633	322.8	320.1	1.0	11.1	6.5	4.9	3	99.2	46
581	6.8	47.7	767	322.8	320.1	0.9	11.9	7.1	7.0	3	99.2	46
582	7.1	49.0	889	322.8	320.1	1.0	12.5	7.2	7.0	3	99.2	46
583	7.2	49.2	914	322.8	320.1	1.1	12.6	6.6	7.6	3	99.2	46
584	7.1	49.1	869	322.8	320.1	1.1	12.3	6.5	6.5	3	99.2	46
585	6.7	48.7	753	322.8	320.1	1.4	11.7	5.7	6.0	3	99.2	46
586	6.3	47.2	622	322.8	320.1	1.3	11.0	6.4	5.1	3	99.2	44
587	6.1	46.9	550	322.8	320.1	1.3	10.6	6.0	4.0	3	99.2	43
588	6.0	46.9	515	322.8	320.1	1.2	10.4	5.9	5.1	3	99.2	43
589	6.0	46.0	514	322.8	320.1	1.1	10.4	5.6	6.6	3	99.2	43
590	6.0	48.1	533	322.8	320.1	1.1	10.5	5.8	7.5	3	99.2	43
591	6.3	47.7	611	322.8	320.1	0.9	11.1	6.2	6.5	3	99.2	43
592	6.5	47.5	694	322.8	320.1	1.0	11.5	6.9	6.4	3	99.2	45
593	6.4	47.5	657	322.8	320.1	1.3	11.3	6.1	6.7	3	99.2	45
594	6.1	47.8	552	322.8	320.1	1.4	10.5	5.9	6.8	3	99.2	45
595	5.8	46.6	476	322.8	320.1	1.3	10.1	5.9	6.4	3	99.2	45
596	5.7	46.2	452	322.8	320.1	1.2	10.0	6.0	5.9	3	99.2	45
597	5.8	46.2	468	322.8	320.1	1.1	10.1	6.2	5.7	3	99.2	45
598	6.0	46.8	514	322.8	320.1	1.0	10.5	6.6	5.9	3	99.2	44
599	6.1	48.4	551	322.8	320.1	1.1	10.6	6.2	5.8	3	99.2	44
600	6.4	48.6	658	322.8	320.1	0.8	11.4	7.4	6.4	3	99.2	44
601	6.8	48.2	783	322.8	320.1	1.0	12.0	7.3	6.3	3	99.2	44
602	6.8	48.6	784	322.8	320.1	1.2	11.9	7.4	6.6	3	99.2	44
603	6.6	47.9	726	322.8	320.1	1.2	11.6	6.6	5.8	3	99.2	44
604	6.7	47.6	737	322.8	320.1	1.2	11.7	6.2	5.3	3	99.2	44
605	6.8	48.0	778	322.8	320.1	1.2	12.0	6.5	4.5	3	99.2	44
606	6.6	48.0	707	322.8	320.1	1.4	11.4	6.0	5.0	3	99.2	44
607	6.4	47.1	651	322.8	320.1	1.2	11.2	6.6	5.0	3	99.2	44
608	6.7	46.9	736	322.8	320.1	0.9	11.7	7.2	6.7	3	99.2	44
609	7.1	48.4	887	322.8	320.1	0.9	12.5	8.3	5.4	3	99.2	44
610	7.3	49.5	938	322.8	320.1	1.0	12.7	7.6	5.7	3	99.2	44
611	7.2	49.2	929	322.8	320.1	1.1	12.6	7.9	6.7	3	99.2	44
612	7.2	49.6	906	322.8	320.1	1.1	12.5	7.5	6.7	3	99.2	44
613	7.1	49.1	863	322.8	320.1	1.1	12.3	6.7	7.3	3	99.2	44
614	7.1	48.2	863	322.8	320.1	1.1	12.3	7.5	6.7	3	99.2	44
615	7.2	49.0	927	322.8	320.1	1.1	12.6	8.0	7.6	3	99.2	44
616	7.2	49.1	898	322.8	320.1	1.2	12.5	6.7	7.1	3	99.2	44

***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	6.8	48.4	760	322.8	320.1	1.4	11.7	6.4	6.9	3	99.2	44
618	6.4	47.2	641	322.8	320.1	1.3	11.1	6.3	6.8	3	99.2	44
619	6.3	47.2	615	322.8	320.1	1.1	11.0	6.7	6.9	3	99.2	44
620	6.5	47.4	676	322.8	320.1	1.0	11.4	7.3	6.4	3	99.2	44
621			777	322.8	320.1	0.9	11.9	7.6	8.0	3	99.2	44
622			859	322.8	320.1	1.0	12.3	7.8	6.6	3	99.2	43
623			927	322.8	320.1	1.1	12.6	8.2	7.4	3	99.2	43
624			1052	322.8	320.1	1.0	13.1	8.8	7.3	3	99.2	43
625			1125	322.8	320.1	1.0	13.5	8.1	6.5	3	99.2	43
626			1016	322.8	320.1	1.3	13.0	6.5	5.4	3	99.2	43
627			826	322.8	320.1	1.4	12.0	6.7	5.0	3	99.2	43
628			661	322.8	320.1	1.4	11.2	6.6	5.2	3	99.2	43
629	6.0	46.8	520	322.8	320.1	1.5	10.3	5.7	5.9	3	99.2	44
630	5.7	45.6	451	322.8	320.1	1.3	9.9	5.9	6.5	3	99.2	44
631	5.8	45.6	475	322.8	320.1	0.9	10.3	5.5	5.9	3	99.2	44
632	6.1	47.6	542	322.8	320.1	1.0	10.6	5.9	5.8	3	99.2	44
633	6.2	47.6	603	322.8	320.1	1.0	11.0	7.0	5.3	3	99.2	44
634	6.3	47.0	622	322.8	320.1	1.1	11.1	6.3	4.9	3	99.2	44
635	6.1	46.8	570	322.8	320.1	1.4	10.6	5.6	4.5	3	99.2	44
636	6.1	47.9	545	322.8	320.1	1.1	10.7	6.3	7.4	3	99.2	44
637	6.1	47.5	554	322.8	320.1	1.2	10.7	5.8	8.2	3	99.2	44
638	6.0	46.1	537	322.8	320.1	1.2	10.4	5.5	7.4	3	99.2	44
639	6.4	46.7	654	322.8	320.1	0.7	11.3	6.8	7.1	3	99.2	44
640	7.2	48.4	893	322.8	320.1	0.8	12.5	7.6	7.4	3	99.2	43
641	7.5	50.5	1011	322.8	320.1	1.0	13.0	6.7	6.4	3	99.1	43
642	7.6	50.7	1049	322.8	320.1	1.1	13.1	7.5	5.0	3	99.1	43
643	7.5	50.8	1036	322.8	320.1	1.1	13.1	6.9	5.3	3	99.1	43
644	7.3	50.6	940	322.8	320.1	1.3	12.6	6.6	5.7	3	99.1	43
645	6.9	48.8	818	322.8	320.1	1.3	12.0	6.7	6.3	3	99.1	43
646	6.7	48.2	730	322.8	320.1	1.3	11.6	6.0	6.7	3	99.2	44
647	6.5	47.6	691	322.8	320.1	1.3	11.4	6.0	7.1	3	99.2	44
648	6.7	47.8	728	322.8	320.1	1.0	11.7	6.9	6.8	3	99.2	44
649	6.7	47.8	742	322.8	320.1	1.2	11.7	6.4	6.5	3	99.2	44
650	6.6	47.8	711	322.8	320.1	1.2	11.5	6.3	5.8	3	99.2	44
651	6.6	47.8	711	322.8	320.1	1.2	11.6	7.0	5.5	3	99.2	44
652	6.4	47.9	652	322.8	320.1	1.3	11.2	6.2	4.6	3	99.2	44
653	6.2	47.5	587	322.8	320.1	1.2	10.8	5.6	4.4	3	99.2	44
654	6.3	47.2	606	322.8	320.1	1.1	11.1	6.6	4.2	3	99.2	44
655	6.1	47.2	547	322.8	320.1	1.5	10.5	5.8	3.5	3	99.2	44
656	5.9	46.1	497	322.8	320.1	1.2	10.1	6.2	3.9	3	99.2	44
657	6.2	47.4	600	322.8	320.1	0.9	11.2	6.2	4.7	3	99.2	44
658	6.3	47.0	630	322.8	320.1	1.2	11.1	6.4	6.3	3	99.2	46
659	6.0	46.6	536	322.8	320.1	1.4	10.5	6.0	6.7	3	99.1	46
660	5.7	46.6	457	322.8	320.1	1.3	9.9	5.5	7.4	3	99.1	46
661	5.9	46.2	511	322.8	320.1	0.9	10.4	5.2	7.0	3	99.1	46
662	6.4	47.0	649	322.8	320.1	0.9	11.4	6.2	6.9	3	99.1	46
663	6.6	47.4	700	322.8	320.1	1.1	11.5	6.5	5.9	3	99.1	46
664	6.6	47.4	714	322.8	320.1	1.0	11.6	6.4	5.2	4	99.1	43
665	6.5	47.4	691	322.8	320.1	1.0	11.5	6.3	4.1	4	99.1	43
666	6.3	47.1	622	322.8	320.1	1.3	11.0	5.8	4.8	4	99.1	43
667	6.0	47.2	539	322.8	320.1	1.3	10.5	5.3	5.3	4	99.1	43
668	5.9	46.3	496	322.8	315.0	1.2	10.2	6.1	5.8	4	99.1	43
669	6.1	46.9	567	322.8	308.5	0.8	10.8	6.4	5.0	4	99.2	43
670			649	322.8	307.4	1.0	11.3	6.8	4.9	4	99.1	46
671			653	322.8	307.4	1.1	11.3	6.6	7.2	4	99.2	47
672			619	322.8	307.4	1.2	11.0	6.3	7.9	4	99.2	47
673			546	322.8	307.4	1.4	10.6	6.1	8.1	4	99.2	47
674			435	322.8	307.4	1.5	9.8	5.5	7.3	4	99.1	47
675			380	322.8	307.4	1.3	9.5	6.2	6.2	4	99.1	47
676			403	322.8	307.4	1.1	9.7	6.0	5.5	4	99.1	43
677			475	322.8	307.4	0.9	10.2	6.9	5.2	4	99.1	42
678			588	322.8	307.4	0.8	11.0	7.6	6.4	4	99.2	42
679			712	322.8	307.4	0.9	11.7	7.1	6.5	4	99.2	42
680			713	322.8	307.4	1.3	11.6	6.5	5.9	4	99.2	42
681			604	322.8	307.4	1.4	10.9	6.2	5.9	4	99.2	42
682			512	322.8	307.4	1.3	10.3	6.3	6.1	3	99.2	45
683			445	322.8	307.4	1.3	9.9	5.5	5.5	3	99.2	45
684	5.2	45.7	333	322.8	310.3	1.5	9.5	5.4	6.2	3	99.2	45
685	5.1	45.6	309	322.8	316.5	1.6	9.5	5.5	6.0	3	99.2	45
686	5.2	44.7	336	322.8	317.2	1.5	9.5	5.6	5.0	3	99.2	45
687	5.3	44.8	361	322.8	317.2	1.4	9.5	4.8	5.4	3	99.2	45
688	5.4	44.9	369	322.8	317.2	1.3	9.5	5.6	5.9	4	99.2	46
689	5.5	44.5	407	322.8	317.2	1.1	9.6	5.6	5.6	4	99.2	46
690	5.8	45.4	481	322.8	317.2	0.8	10.3	6.4	4.8	4	99.2	46
691	6.0	47.3	527	322.8	317.2	1.2	10.5	5.2	5.1	4	99.2	46
692	5.8	46.0	487	322.8	317.2	1.2	10.2	5.7	4.7	4	99.2	46
693	5.7	45.5	443	322.8	317.2	1.3	9.9	5.3	5.1	4	99.2	46
694	5.5	45.1	400	322.8	317.2	1.2	9.6	5.4	5.2	3	99.2	45
695	5.2	44.5	322	322.8	317.2	1.3	9.5	4.7	5.3	3	99.2	45
696	4.7	44.2	233	322.8	317.2	1.7	9.5	5.0	5.8	3	99.2	45
697	4.6	45.6	212	322.8	317.2	2.3	9.5	4.9	6.2	3	99.2	45
698	4.6	44.5	202	322.8	317.2	2.3	9.5	5.1	5.8	3	99.2	45
699	5.1	45.7	300	322.8	317.2	2.2	9.5	5.7	5.1	3	99.2	45
700	5.0	45.6	275	322.8	317.2	1.6	9.5	5.8	6.0	4	99.2	45
701	4.4	45.0	169	322.8	317.2	2.1	9.5	4.6	6.6	4	99.2	45
702	4.5	44.7	193	322.8	317.2	2.5	9.5	4.6	5.8	4	99.2	45
703	5.3	46.2	343	322.8	317.2	2.1	9.5	4.8	4.2	4	99.2	45
704	5.5	44.3	402	322.8	317.2	1.1	9.8	5.9	4.2	4	99.2	45

Table E.01 Measurement data - Turbine ON

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 11/1/2017

***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	5.7	45.4	451	322.8	317.2	1.1	10.1	5.9	3.8	4	99.2	45
706			426	322.8	317.2	1.4	9.8	5.1	3.7	4	99.2	42
707			437	322.8	317.2	1.0	10.0	5.8	4.2	4	99.2	42
708			496	322.8	317.2	1.1	10.4	6.7	3.5	4	99.2	42
709			466	322.8	317.2	1.3	10.0	5.5	3.4	4	99.2	42
710			382	322.8	317.2	1.3	9.6	5.4	3.4	4	99.2	42
711			319	322.8	317.2	1.4	9.5	5.6	2.9	4	99.2	42
712			273	322.8	317.2	1.6	9.5	4.8	3.1	3	99.2	43
713	5.2	44.8	324	322.8	317.2	1.7	9.5	5.3	3.6	3	99.2	43
714	5.2	45.2	323	322.8	320.0	1.5	9.5	5.8	4.3	3	99.2	43
715	4.3	44.3	146	322.8	320.1	2.0	9.4	4.9	4.8	3	99.2	43
716	4.5	44.3	190	322.8	320.1	2.5	9.5	4.6	5.2	3	99.2	43
717	5.0	45.2	285	322.8	320.1	2.2	9.5	5.2	6.5	3	99.2	43
718			405	322.8	320.1	1.2	9.8	6.1	7.0	3	99.2	47
719			505	322.8	320.1	0.9	10.5	8.0	7.0	3	99.2	48
720			616	322.8	320.1	0.9	11.1	7.2	6.4	3	99.2	48
721			747	322.8	320.1	0.9	11.8	7.5	5.8	3	99.2	48
722			812	322.8	320.1	1.0	12.1	7.4	5.9	3	99.2	48
723			761	322.8	320.1	1.3	11.8	6.5	5.8	3	99.2	48
724			681	322.8	320.1	1.3	11.4	6.2	6.7	4	99.2	45
725			628	322.8	320.1	1.2	11.1	6.2	6.4	4	99.2	45
726			593	322.8	320.1	1.2	10.9	6.1	7.2	4	99.2	45
727			572	322.8	320.1	1.2	10.8	5.7	7.8	4	99.2	45
728			598	322.8	320.1	1.0	11.0	6.7	7.3	4	99.2	45
729			677	322.8	320.1	1.0	11.5	7.3	6.4	4	99.2	45
730			653	322.8	320.1	1.3	11.3	6.2	5.5	4	99.2	43
731	6.2	46.8	573	322.8	320.1	1.3	10.7	6.0	5.4	4	99.2	43
732	6.1	46.8	560	322.8	320.1	1.0	10.8	6.4	4.9	4	99.2	43
733	6.0	47.7	539	322.8	320.1	1.3	10.6	5.3	4.8	4	99.2	43
734	5.7	46.9	447	322.8	320.1	1.4	9.9	5.0	4.7	4	99.2	43
735	5.3	45.5	354	322.8	320.1	1.4	9.5	5.1	4.9	4	99.2	43
736	5.5	44.4	397	322.8	320.1	1.3	9.6	5.6	4.3	3	99.2	45
737	5.9	45.5	503	322.8	320.1	0.8	10.4	6.2	4.3	3	99.2	45
738	6.4	47.3	656	322.8	320.1	0.9	11.4	6.8	5.3	3	99.2	45
739	6.5	47.7	672	322.8	320.1	1.2	11.3	6.6	5.1	3	99.2	45
740	6.2	46.9	584	322.8	320.1	1.3	10.8	5.7	5.6	3	99.2	45
741	5.7	46.9	455	322.8	320.1	1.5	10.0	4.9	5.9	3	99.2	45
742	5.4	44.8	386	322.8	320.1	1.5	9.6	4.7	6.4	4	99.2	45
743	5.5	44.9	403	322.8	320.1	1.0	9.7	6.2	6.5	4	99.2	45
744	5.6	45.2	428	322.8	320.1	1.1	9.8	5.6	6.6	4	99.2	45
745	5.8	45.5	483	322.8	320.1	0.9	10.3	6.7	6.8	4	99.2	45
746	6.1	47.1	544	322.8	320.1	1.0	10.7	6.3	6.3	4	99.2	45
747	6.2	47.2	575	322.8	320.1	1.0	10.8	5.8	5.5	4	99.2	45
748	6.4	47.8	639	322.8	320.1	1.0	11.2	6.1	4.7	4	99.2	43
749	6.4	47.6	663	322.8	320.1	1.2	11.3	6.4	4.3	4	99.2	43
750	6.1	47.1	569	322.8	320.1	1.4	10.7	5.5	4.4	4	99.2	43
751	5.6	47.6	428	322.8	320.1	1.5	9.8	4.9	4.4	4	99.2	43
752	5.1	46.1	315	322.8	320.1	1.5	9.5	5.4	3.5	4	99.2	43
753	5.1	44.9	304	322.8	320.1	1.6	9.5	5.3	3.7	4	99.2	43
754	5.1	45.0	312	322.8	320.1	1.6	9.5	5.7	2.9	3	99.2	45
755	4.6	44.7	215	322.8	320.1	1.8	9.5	5.1	2.6	3	99.2	46
756	4.1	44.1	116	322.8	320.1	2.4	9.5	4.3	2.3	3	99.2	46
757	4.0	43.7	102	322.8	320.1	3.4	9.5	4.1	2.9	3	99.2	46
758	4.0	43.8	100	322.8	320.1	3.6	9.5	3.7	2.5	3	99.2	46
759	4.0	43.8	100	322.8	320.1	3.6	9.5	3.6	3.0	3	99.1	46
760	4.0	44.2	100	322.8	320.1	3.6	9.5	3.4	5.0	4	99.1	46
761	4.0	43.7	100	322.8	320.1	3.6	9.5	3.9	6.3	4	99.1	46
762	4.0	44.9	100	322.8	320.1	3.6	9.5	3.7	6.3	4	99.1	46
763	4.0	44.2	103	322.8	320.1	3.6	9.5	4.0	7.6	4	99.1	46
764	5.0	44.1	272	322.8	320.1	3.3	9.6	4.4	7.6	4	99.1	46
765	5.9	45.4	501	322.8	320.1	1.1	10.3	6.7	7.1	4	99.1	46
766	6.7	47.7	745	322.8	320.1	0.7	11.9	7.8	7.2	4	99.1	46
767	7.2	49.2	923	322.8	320.1	1.0	12.6	6.8	6.8	4	99.2	45
768	7.6	50.2	1068	322.8	320.1	1.0	13.2	8.3	6.4	4	99.1	45
769	7.9	51.0	1170	322.8	320.1	1.2	13.6	8.7	6.2	4	99.1	45
770	7.9	51.1	1173	322.8	320.1	1.1	13.6	7.8	7.8	4	99.1	45
771	7.9	50.8	1179	322.8	320.1	1.1	13.6	8.5	7.7	4	99.1	45
772	8.0	51.2	1212	322.8	320.1	1.0	13.8	8.7	6.7	4	99.1	43
773	7.7	51.3	1100	322.8	320.1	1.3	13.3	6.8	5.4	4	99.1	43
774	7.4	50.4	995	322.8	320.1	1.2	12.8	6.6	4.9	4	99.1	43
775	7.5	50.3	1026	322.8	320.1	1.0	13.0	7.2	5.4	4	99.1	43
776	7.6	51.5	1060	322.8	320.1	0.9	13.2	7.5	7.0	4	99.1	43
777	7.5	50.7	1015	322.8	320.1	1.2	13.0	6.6	6.5	4	99.1	43
778	7.5	50.7	1013	322.8	320.1	1.1	12.9	7.5	6.1	4	99.1	43
779	7.7	50.5	1101	322.8	320.1	1.0	13.4	7.5	6.0	4	99.1	43
780	7.4	51.1	998	322.8	320.1	1.4	12.9	7.4	5.5	4	99.1	43
781	7.0	48.9	828	322.8	320.1	1.4	12.1	6.7	4.6	4	99.1	43
782	6.8	48.5	771	322.8	320.1	1.3	11.8	6.2	4.1	4	99.1	43
783	6.8	48.6	771	322.8	320.1	1.3	11.9	6.7	3.1	3	99.1	43
784	6.7	48.4	731	322.8	320.1	1.3	11.7	6.7	3.8	3	99.1	43
785	6.3	47.8	630	322.8	320.1	1.4	11.0	6.0	4.7	3	99.1	43
786	6.0	48.0	518	322.8	320.1	1.4	10.3	5.4	4.4	3	99.1	43
787	5.6	46.0	430	322.8	320.1	1.3	9.8	5.7	3.6	3	99.1	43
788	5.1	45.2	301	322.8	320.1	1.4	9.5	4.6	4.0	3	99.1	43
789	4.6	45.0	210	322.8	316.3	1.9	9.5	4.3	4.0	3	99.1	43
790	4.6	45.1	212	322.8	313.2	2.2	9.5	4.7	3.4	3	99.1	44
791	4.6	44.5	209	322.8	313.2	2.2	9.5	5.5	3.4	3	99.1	44
792	4.3	44.8	152	322.8	313.2	2.5	9.5	4.5	3.4	3	99.1	44

***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	4.3	44.5	144	322.8	313.2	2.6	9.5	4.5	2.8	3	99.1	44
794	4.2	44.4	127	322.8	313.2	3.4	9.5	4.5	3.4	3	99.1	44
795	4.3	44.3	144	322.8	313.2	3.6	9.5	5.5	2.7	3	99.1	44
796	4.1	44.4	111	322.8	313.2	3.6	9.5	4.4	2.9	3	99.1	47
797	4.2	44.0	140	322.8	313.2	3.6	9.5	4.8	3.7	3	99.1	47
798	4.8	45.4	242	322.8	313.2	2.7	9.5	5.0	4.0	3	99.1	47
799	4.8	45.1	239	322.8	313.2	2.2	9.5	5.1	4.7	3	99.1	47
800	4.6	45.1	200	322.8	313.2	2.3	9.5	5.1	4.7	3	99.1	47
801	4.2	44.1	133	322.8	313.2	2.5	9.5	4.9	6.0	3	99.1	47
802	4.4	43.9	168	322.8	313.2	2.7	9.5	4.5	6.0	4	99.1	49
803	4.9	44.4	263	322.8	313.2	2.4	9.5	5.1	6.1	4	99.1	49
804	5.4	44.7	381	322.8	313.2	1.5	9.6	6.0	5.0	4	99.1	49
805	5.9	45.6	512	322.8	313.2	0.8	10.5	7.1	4.7	4	99.1	49
806	6.3	47.2	618	322.8	313.2	1.1	11.2	6.5	5.5	4	99.1	49
807	6.0	46.5	539	322.8	313.2	1.7	10.4	5.4	5.4	4	99.1	49
808	5.5	45.5	396	322.8	314.1	1.5	9.7	4.8	5.4	4	99.1	43
809	5.5	45.5	407	322.8	320.4	1.1	9.7	6.3	5.4	4	99.1	42
810	5.8	46.4	466	322.8	325.6	0.9	10.3	6.1	5.6	4	99.1	42
811	5.9	47.7	492	322.8	325.9	1.3	10.2	6.7	4.9	4	99.1	42
812	5.7	46.1	452	322.8	325.9	1.2	10.0	6.6	4.9	4	99.1	42
813	5.5	45.2	409	322.8	325.9	1.3	9.7	5.5	4.3	4	99.1	42
814	5.0	45.0	285	322.8	325.9	1.6	9.5	4.6	3.8	4	99.1	44
815	4.7	45.2	234	322.8	325.9	1.9	9.5	5.3	3.4	4	99.2	44
816	4.7	44.8	223	322.8	325.9	2.3	9.5	4.8	4.0	4	99.1	44
817	4.6	45.2	216	322.8	325.9	2.2	9.5	5.2	2.8	4	99.1	44
818	4.4	44.6	175	322.8	325.9	2.4	9.5	4.6	4.2	4	99.1	44
819	4.1	44.4	123	322.8	325.9	2.6	9.5	4.3	3.4	4	99.1	44
820	4.0	44.1	100	322.8	325.9	3.5	9.5	4.2	4.1	4	99.1	44
821	4.0	44.8	104	322.8	325.9	3.6	9.5	4.3	4.7	4	99.1	44
822	4.0	44.4	103	322.8	325.9	3.6	9.5	5.2	5.6	4	99.1	44
823	4.4	44.6	162	322.8	325.9	3.5	9.5	5.1	5.4	4	99.1	44
824	4.9	45.1	254	322.8	325.9	2.4	9.5	4.9	6.4	4	99.1	44
825	4.7	44.7	230	322.8	325.9	2.3	9.5	5.1	7.5	4	99.1	44
826	5.1	44.4	310	322.8	325.9	2.1	9.5	6.2	7.0	4	99.1	43
827	5.2	45.1	328	322.8	325.9	1.5	9.5	5.7	7.0	4	99.1	43
828	5.2	45.1	330	322.8	325.9	1.5	9.5	5.4	6.1	4	99.1	43
829	5.5	44.8	410	322.8	325.9	1.3	9.6	5.8	5.9	4	99.1	43
830	5.8	45.6	478	322.8	325.9	0.8	10.3	6.0	6.8	4	99.1	43
831	6.1	47.9	565	322.8	329.8	1.0	10.8	6.4	6.6	4	99.1	43
832	6.3	47.5	603	322.8	336.6	1.0	11.0	6.5	5.2	4	99.1	43
833			601	322.8	342.5	1.2	11.0	5.9	5.0	4	99.1	43
834			529	322.8	343.5	2.5	10.5	5.5	4.8	4	99.1	43
835			392	322.8	343.5	3.6	9.7	4.7	4.7	4	99.1	43
836			379	322.8	343.5	3.6	9.6	5.5	5.2	4	99.1	43
837	9.6	53.8	1632	340.9	341.0	5.0	14.8	9.4	10.2	5	98.9	78
838	9.3	54.1	1671	340.9	341.0	5.0	15.5	9.1	10.2	5	98.9	78
839	9.5	54.9	1590	340.9	341.0	5.0	14.9	9.3	8.8	5	98.9	78
840	9.9	53.7	1627	340.9	341.0	5.0	15.1	9.8	8.8	5	98.9	78
841	9.5	54.0	1616	340.9	341.0	5.0	15.0	9.4	8.7	5	98.9	77
842	10.7	54.3	1649	340.9	341.0	5.0	15.4	10.5	7.3	5	98.9	77
843	11.5	55.1	1617	340.9	341.0	5.0	15.2	11.3	7.2	5	98.9	77
844	10.9	54.3	1603	340.9	341.0	5.0	14.9	10.7	6.9	5	98.9	77
845	10.4	53.7	1628	340.9	344.0	5.0	15.0	10.2	6.7	5	98.9	77
846			1618	340.9	346.8	5.0	14.9	8.9	6.6	5	98.9	78
847			1623	340.9	346.8	5.0	15.0	9.0	7.1	5	98.9	80
848	9.0	55.0	1481	340.9	346.8	5.0	14.6	10.2	7.6	5	98.9	80
849	8.5	53.1	1359	340.9	346.8	5.0	13.6	9.1	7.2	5	98.9	80
850	8.5	51.9	1337	340.9	346.9	5.0	12.9	7.8	7.8	5	98.9	80
851	8.7	51.0	1410	340.9	346.9	5.0	12.9	9.0	8.2	5	98.9	80
852	9.0	51.7	1472	340.9	346.9	5.0	13.2	8.7	8.2	5	98.9	79
853	8.9	52.6	1453	340.9	346.9	5.0	13.2	8.1	8.2	5	98.9	77
854	8.5	52.7	1343	340.9	346.9	5.0	13.6	7.7	8.1	5	98.9	77
855	9.2	53.6	1496	340.9	346.9	5.0	14.8	8.3	8.1	5	98.9	77
856	8.9	53.6	1452	340.9	346.9	5.0	14.6	8.1	8.9	5	98.9	77
857	8.6	52.7	1376	340.9	346.9	5.0	14.3	7.9	10.0	5	98.9	77
858	8.8	53.0	1425	340.9	346.9	5.0	14.5	8.7	10.2	5	98.9	77
859			1612	340.9	346.9	5.0	15.1	8.6	9.5	5	98.9	76
860	9.5	55.3	1647	340.9	346.9	5.0	15.8	9.3	9.4	5	98.9	76
861	9.6	55.1	1617	340.9	346.9	5.0	15.5	9.4	8.9	5	98.9	76
862			1613	340.9	346.9	5.0	15.4	8.7	9.2	5	98.9	76
863	9.7	54.7	1603	340.9	346.9	5.0	15.1	9.6	7.7	5	98.9	76
864			1577	340.9	346.9	5.0	14.4	7.4	7.6	5	98.9	76
865	9.4	53.6	1646	340.9	346.9	5.0	15.0	9.3	8.1	5	98.9	77
866	11.2	54.9	1645	340.9	346.9	5.0	15.3	11.0	9.7	5	98.9	77
867			1623	340.9	346.9	5.0	15.2	8.7	11.3	5	98.9	77
868	10.5	55.2	1623	340.9	346.9	5.0	15.2	10.3	11.1	5	98.9	77
869	9.4	54.4	1621	340.9	346.9	5.0	15.1	9.3	10.2	5	98.9	77
870	10.4	54.4	1623	340.9	346.9	5.0	15.1	10.2	9.3	5	98.9	76
871	11.6	55.0	1634	340.9	346.9	5.0	15.3	11.4	8.7	5	98.9	75
872	12.0	55.4	1611	340.9	346.8	5.0	15.0	11.8	9.3	5	98.9	75
873	10.2	54.7	1614	340.9	346.8	5.0	14.8	10.0	10.2	5	98.9	75
874			1619	340.9	346.8	5.0	14.8	8.3	10.3	5	98.9	75
875	10.3	53.7	1644	340.9	346.9	5.0	15.0	10.1	10.1	5	98.9	75
876	9.6	54.3	1622	340.9	346.8	5.0	15.0	9.4	9.4	5	98.9	75
877	10.1	54.1	1631	340.9	346.8	5.0	15.1	10.0	8.6	5	98.9	75
878	10.0	55.2	1625	340.9	346.8	5.0	15.1	9.9	9.7	5	98.9	75
879	10.0	54.5	1597	340.9	346.8	5.0	14.7	9.9	8.9	5	98.9	75
880	9.7	53.9	1634	340.9	346.8	5.0	14.9	9.5	8.7	5	98.9	75

Table E.01 Measurement data - Turbine ON

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 11/1/2017

***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	9.9	54.5	1616	340.9	346.8	5.0	14.8	9.7	8.7	5	98.9	75
882	9.6	53.8	1633	340.9	346.8	5.0	14.9	9.5	8.5	5	98.9	76
883			1623	340.9	346.8	5.0	15.0	8.5	8.3	5	98.9	77
884			1632	340.9	346.8	5.0	15.0	8.7	7.1	5	98.9	77
885			1641	340.9	346.8	5.0	15.2	8.8	7.5	5	98.9	77
886	10.2	54.2	1649	340.9	346.9	5.0	15.6	10.0	7.5	5	98.9	77
887	11.1	55.3	1617	340.9	346.8	5.0	15.3	11.0	10.0	5	98.9	77
888	10.3	54.8	1612	340.9	346.8	5.0	15.1	10.1	10.0	5	98.9	77
889	10.8	54.5	1628	340.9	346.8	5.0	15.2	10.6	10.6	5	98.9	77
890	11.8	55.3	1624	340.9	346.9	5.0	15.2	11.6	9.7	5	98.9	77
891	10.4	54.6	1618	340.9	346.8	5.0	15.0	10.2	9.7	5	98.9	77
892	10.6	55.0	1619	340.9	344.5	5.0	14.9	10.5	9.8	5	98.9	77
893	10.3	55.2	1624	340.9	343.9	5.0	14.9	10.1	9.5	5	98.9	77
894	9.3	54.6	1631	340.9	343.9	5.0	15.0	9.1	8.7	5	98.9	77
895	9.6	54.9	1634	340.9	343.9	5.0	15.1	9.4	9.5	5	98.9	77
896			1622	340.9	343.9	5.0	15.1	8.8	8.8	5	98.9	77
897			1621	340.9	343.9	5.0	15.0	9.0	8.5	5	98.9	77
898			1598	340.9	343.3	5.0	14.8	8.2	7.7	5	98.9	77
899			1633	340.9	337.9	5.0	14.8	8.9	8.8	5	98.9	77
900			1630	340.9	335.1	5.0	14.8	8.3	8.6	5	98.9	77
901	9.9	53.8	1652	340.9	335.1	5.0	15.3	9.7	7.4	5	98.9	77
902	10.4	54.5	1619	340.9	335.1	5.0	15.1	10.2	6.9	5	98.9	77
903	9.7	54.3	1632	340.9	335.1	5.0	15.2	9.5	7.1	5	98.9	77
904			1613	340.9	335.1	5.0	15.0	8.2	7.8	5	98.9	77
905	9.3	53.8	1615	340.9	335.1	5.0	14.8	9.1	7.4	5	98.9	77
906	11.4	53.9	1652	340.9	335.1	5.0	15.4	11.2	8.2	5	98.9	77
907	9.7	54.1	1586	340.9	335.1	5.0	14.8	9.6	7.5	5	98.9	79
908	9.3	54.0	1610	340.9	335.1	5.0	14.7	9.1	8.6	5	98.9	79
909			1551	340.9	335.1	5.0	14.1	8.3	7.7	5	98.9	79
910	8.5	52.7	1341	340.9	335.1	5.0	13.9	7.3	6.9	5	98.9	79
911	9.8	54.0	1660	340.9	335.1	5.0	15.3	9.7	7.2	5	98.9	79
912	9.5	54.8	1635	340.9	338.5	5.0	15.3	9.4	7.4	5	98.9	79
913			1617	340.9	343.6	5.0	15.3	8.1	7.0	5	98.9	78
914	8.8	54.0	1427	340.9	343.9	5.0	14.6	7.3	7.2	5	98.9	78
915	7.7	52.6	1093	340.9	343.9	5.0	13.4	6.4	7.2	5	98.9	78
916	7.4	51.6	972	340.9	343.9	5.0	13.0	6.7	7.3	5	98.9	78
917	7.3	51.2	946	340.9	343.9	5.0	12.9	7.1	6.8	5	98.9	78
918	7.9	51.2	1159	340.9	343.9	5.0	13.8	10.0	6.7	5	98.9	78
919	9.8	53.4	1631	340.9	343.9	5.0	14.9	9.7	9.6	5	98.9	79
920			1642	340.9	343.9	5.0	15.1	8.3	11.0	5	98.9	79
921			1644	340.9	343.9	5.0	15.4	9.1	9.7	5	98.9	79
922	10.2	54.9	1615	340.9	343.9	5.0	15.1	10.0	9.4	5	98.9	79
923			1604	340.9	343.9	5.0	14.8	8.4	9.1	5	98.9	79
924	10.1	54.0	1645	340.9	343.9	5.0	15.2	10.0	9.1	5	98.9	77
925	10.6	54.6	1620	340.9	343.9	5.0	15.1	10.4	9.0	5	98.9	75
926	9.8	54.5	1608	340.9	343.9	5.0	15.0	9.7	9.1	5	98.9	75
927			1610	340.9	343.9	5.0	14.8	9.0	9.4	5	98.9	75
928	9.5	53.8	1633	340.9	343.9	5.0	14.9	9.3	8.1	5	98.9	75
929	9.7	54.5	1647	340.9	343.9	5.0	15.3	9.5	8.9	5	98.9	75
930	9.8	54.7	1621	340.9	343.9	5.0	15.1	9.6	10.3	5	98.9	75
931	9.9	54.2	1624	340.9	343.9	5.0	15.1	9.8	10.9	5	98.9	76
932			1601	340.9	343.9	5.0	14.8	8.9	10.5	5	98.9	76
933			1600	340.9	343.9	5.0	14.5	7.8	8.6	5	98.9	76
934			1612	340.9	343.9	5.0	14.4	8.1	8.2	5	98.9	76
935	10.7	53.5	1671	340.9	343.9	5.0	15.1	10.5	8.6	5	98.9	76
936	10.4	55.1	1672	340.9	343.9	5.0	15.7	10.3	11.4	5	98.9	76
937	9.5	54.9	1617	340.9	343.9	5.0	15.4	9.3	10.9	5	98.9	76
938	9.9	54.4	1608	340.9	343.9	5.0	15.1	9.8	10.9	5	98.9	76
939			1622	340.9	343.9	5.0	15.1	8.6	10.6	5	98.9	76
940			1622	340.9	343.9	5.0	15.1	9.1	10.1	5	98.9	75
941	10.4	54.3	1636	340.9	343.9	5.0	15.2	10.3	10.2	5	98.9	75
942	10.9	54.7	1622	340.9	343.9	5.0	15.3	10.7	10.2	5	98.9	75
943	11.0	54.6	1617	340.9	343.9	5.0	15.1	10.8	9.7	5	98.9	75
944	10.3	54.4	1620	340.9	343.9	5.0	15.0	10.1	10.1	5	98.9	75
945	10.3	54.1	1642	340.9	343.9	5.0	15.3	10.1	8.7	5	98.9	75
946	11.5	54.8	1622	340.9	343.9	5.0	15.2	11.3	8.8	5	98.9	75
947	12.5	54.4	1623	340.9	343.9	5.0	15.2	12.3	8.6	5	98.9	75
948	11.8	54.7	1621	340.9	343.9	5.0	15.1	11.6	9.6	5	98.9	75
949	9.9	54.2	1614	340.9	343.9	5.0	14.9	9.7	10.3	4	98.9	77
950	9.3	53.6	1619	340.9	343.9	5.0	14.8	9.2	9.6	4	98.9	77
951			1641	340.9	343.9	5.0	15.0	8.2	10.1	4	98.9	77
952	9.9	54.0	1629	340.9	343.9	5.0	15.1	9.8	10.1	4	98.9	77
953			1608	340.9	343.9	5.0	14.8	8.9	10.5	4	98.9	77
954	9.9	53.6	1646	340.9	343.9	5.0	15.1	9.7	10.4	5	98.9	76
955	10.1	55.4	1626	340.9	343.9	5.0	15.2	10.0	9.3	5	98.9	75
956	11.1	54.5	1631	340.9	343.9	5.0	15.3	11.0	10.4	5	98.9	75
957	10.5	54.6	1610	340.9	343.9	5.0	15.0	10.4	9.3	5	98.9	75
958	9.7	54.2	1618	340.9	343.9	5.0	14.9	9.5	10.2	5	98.9	75
959	11.0	54.4	1642	340.9	343.9	5.0	15.2	10.8	10.6	5	98.9	75
960	12.1	55.7	1631	340.9	343.9	5.0	15.3	11.9	10.7	5	98.9	75
961	11.4	54.9	1624	340.9	343.9	5.0	15.2	11.2	10.0	5	98.9	76
962	12.3	54.5	1621	340.9	343.9	5.0	15.1	12.1	10.5	5	98.9	76
963	11.1	55.0	1619	340.9	343.9	5.0	15.0	10.9	10.5	5	98.9	76
964	10.9	55.2	1630	340.9	343.9	5.0	15.1	10.7	10.2	5	98.9	76
965	10.1	54.7	1625	340.9	343.9	5.0	15.1	9.9	10.9	5	98.9	76
966	12.0	55.1	1623	340.9	343.9	5.0	15.0	11.9	9.9	5	98.9	76
967	10.5	54.8	1630	340.9	343.9	5.0	15.1	10.3	9.4	5	98.9	76
968	11.6	54.7	1623	340.9	343.9	5.0	15.0	11.4	10.9	5	98.9	76

***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	11.6	54.9	1628	340.9	343.9	5.0	15.1	11.4	11.1	5	98.9	76
970	11.8	54.9	1623	340.9	343.9	5.0	15.1	11.6	10.1	5	98.9	76
971	10.7	54.6	1626	340.9	343.9	5.0	15.0	10.6	9.9	5	98.9	76
972	11.5	55.0	1631	340.9	343.9	5.0	15.1	11.3	8.7	5	98.9	76
973	11.5	54.8	1620	340.9	343.9	5.0	15.0	11.3	9.5	5	98.9	76
974	11.2	54.6	1627	340.9	343.9	5.0	15.1	11.0	9.6	5	98.9	76
975	10.1	54.8	1625	340.9	343.9	5.0	15.0	9.9	8.3	5	98.9	76
976	11.3	54.4	1628	340.9	343.9	5.0	15.1	11.2	8.2	5	98.9	76
977	10.8	54.5	1625	340.9	343.9	5.0	15.1	10.7	8.4	5	98.9	76
978	10.6	54.7	1626	340.9	343.9	5.0	15.1	10.5	9.6	5	98.9	76
979	10.9	54.9	1627	340.9	343.9	5.0	15.1	10.7	10.7	5	98.9	77
980	11.6	54.7	1627	340.9	343.9	5.0	15.1	11.5	11.3	5	98.9	77
981	11.5	54.7	1622	340.9	343.9	5.0	15.0	11.3	11.0	5	98.9	77
982	11.9	54.8	1621	340.9	343.9	5.0	15.0	11.7	9.6	5	98.9	77
983	10.5	53.9	1630	340.9	343.9	5.0	15.0	10.3	10.4	5	98.9	77
984	11.6	55.0	1628	340.9	343.9	5.0	15.1	11.4	10.5	5	98.9	76
985	11.8	54.8	1624	340.9	343.9	5.0	15.0	11.6	10.2	5	98.9	75
986	10.9	54.9	1624	340.9	343.9	5.0	15.0	10.7	10.9	5	98.9	75
987	10.4	54.6	1631	340.9	343.9	5.0	15.1	10.2	9.7	5	98.9	75
988	10.7	54.9	1625	340.9	343.9	5.0	15.1	10.6	8.5	5	98.9	75
989	10.5	54.3	1623	340.9	343.9	5.0	15.1	10.3	9.6	5	98.9	75
990	10.3	54.5	1623	340.9	343.9	5.0	15.0	10.2	9.0	5	98.9	75
991	11.3	54.2	1630	340.9	343.9	5.0	15.1	11.1	9.6	5	98.9	77
992	11.6	54.7	1619	340.9	343.9	5.0	15.0	11.4	9.0	5	98.9	77
993	9.8	53.8	1624	340.9	343.9	5.0	14.9	9.6	8.0	5	98.9	77
994	10.4	54.1	1625	340.9	343.9	5.0	15.0	10.3	8.3	5	98.9	77
995	9.8	53.8	1613	340.9	343.9	5.0	14.8	9.7	8.7	5	98.9	77
996			1637	340.9	343.9	5.0	15.0	9.0	9.6	5	98.9	76
997	9.5	53.9	1630	340.9	343.9	5.0	15.0	9.4	10.0	5	98.9	75
998	9.7	54.0	1650	340.9	343.9	5.0	15.3	9.6	9.9	5	98.9	75
999	11.3	54.6	1624	340.9	343.9	5.0	15.3	11.1	9.4	5	98.9	75
1000	9.8	54.4	1619	340.9	343.9	5.0	15.1	9.6	8.9	5	98.9	75
1001	10.6	54.1	1624	340.9	343.9	5.0	15.1	10.4	9.6	5	98.9	75
1002	10.5	54.5	1623	340.9	343.9	5.0	15.1	10.3	9.1	5	98.9	75
1003	11.0	53.9	1624	340.9	343.9	5.0	15.1	10.8	8.8	5	98.9	75
1004	11.3	54.6	1620	340.9	343.9	5.0	15.0	11.1	8.1	5	98.9	75
1005	10.1	54.1	1612	340.9	343.9	5.0	14.8	10.0	7.9	5	98.9	75
1006	9.8	53.7	1638	340.9	343.9	5.0	15.0	9.7	8.0	5	98.9	75
1007	10.0	54.0	1618	340.9	343.9	5.0	14.9	9.8	9.0	5	98.9	75
1008			1611	340.9	343.9	5.0	14.7	9.0	8.4	5	98.9	75
1009	9.7	53.6	1649	340.9	343.9	5.0	15.1	9.6	7.9	5	98.9	75
1010	9.8	54.4	1634	340.9	343.9	5.0	15.2	9.7	7.5	5	98.9	75
1011	10.0	53.9	1625	340.9	343.9	5.0	15.1	9.9	8.7	5	98.9	75
1012	10.7	54.7	1631	340.9	343.9	5.0	15.3	10.5	10.0	5	98.9	75
1013	10.9	54.6	1624	340.9	343.9	5.0	15.2	10.7	9.8	5	98.9	75
1014	10.5	54.3	1620	340.9	343.9	5.0	15.1	10.3	9.6	5	98.9	75
1015	10.4	54.1	1625	340.9	343.9	5.0	15.1	10.2	9.7	5	98.9	75
1016	10.4	54.0	1622	340.9	343.9	5.0	15.1	10.2	9.4	5	98.9	75
1017	10.8	54.1	1624	340.9	343.9	5.0	15.1	10.6	8.8	5	98.9	75
1018	10.5	54.0	1622	340.9	343.9	5.0	15.0	10.3	9.5	5	98.9	75
1019			1621	340.9	343.9	5.0	14.9	9.0	9.0	5	98.9	75
1020	9.8	54.0	1633	340.9	343.9	5.0	15.1	9.7	9.5	5	98.9	75
1021	9.6	54.2	1620	340.9	343.9	5.0	15.0	9.4	10.2	5	98.9	75
1022	10.4	54.3	1624	340.9	343.9	5.0	15.0	10.3	10.5	5	98.9	75
1023			1623	340.9	343.9	5.0	15.0	9.1	9.8	5	98.9	75
1024			1623	340.9	343.9	5.0	14.9	9.0	9.8	5	98.9	75
1025	9.9	53.8	1643	340.9	343.9	5.0	15.2	9.8	9.7	5	98.9	75
1026	9.7	54.6	1626	340.9	343.9	5.0	15.2	9.6	8.5	5	98.9	75
1027	9.8	54.3	1611	340.9	343.9	5.0	14.9	9.7	8.2	5	98.9	75
1028	10.4	54.0	1634	340.9	343.9	5.0	15.1	10.3	8.7	5	98.9	75
1029	9.5	54.4	1633	340.9	343.9	5.0	15.2	9.4	9.5	5	98.9	75
1030	11.3	54.5	1624	340.9	343.9	5.0	15.2	11.1	9.1	5	98.9	75
1031	10.6	54.6	1619	340.9	343.9	5.0	15.1	10.4	8.9	5	98.9	75
1032	10.4	54.3	1627	340.9	343.9	5.0	15.1	10.3	10.5	5	98.9	75
1033	10.0	53.9	1610	340.9	343.9	5.0	14.9	9.8	10.4	5	98.9	76
1034	10.1	53.8	1636	340.9	343.9	5.0	15.1	10.0	10.0	5	98.9	76
1035	10.8	54.1	1617	340.9	343.9	5.0	15.0	10.6	7.2	5	98.9	76
1036			1632	340.9	343.9	5.0	15.0	10.1	7.2	5	98.9	76
1037			1628	340.9	343.9	5.0	15.2	10.6	6.6	5	98.9	76
1038			1618	340.9	343.9	5.0	15.0	11.0	6.3	5	98.9	76
1039			1614	340.9	343.9	5.0	14.8	8.5	7.1	5	98.9	77
1040			1640	340.9	343.9	5.0	15.1	10.8	7.7	5	98.9	77
1041	9.4	54.2	1626	340.9	343.9	5.0	15.1	9.2	9.5	5	98.9	77
1042	10.9	54.4	1626	340.9	343.9	5.0	15.1	10.8	9.3	5	98.9	77
1043	11.7	54.6	1620	340.9	343.9	5.0	15.0	11.5	9.6	5	98.9	77
1044	10.0	53.9	1622	340.9	343.9	5.0	15.0	9.8	9.6	5	98.9	77
1045	10.0	54.0	1629	340.9	343.9	5.0	15.1	9.8	8.9	5	98.9	76
1046	9.9	54.1	1636	340.9	343.9	5.0	15.2	9.7	8.3	5	98.9	76
1047	10.3	54.2	1625	340.9	343.9	5.0	15.2	10.1	7.7	5	98.9	76
1048	11.4	54.3	1617	340.9	343.9	5.0	15.0	11.2	8.1	5	98.9	76
1049			1619	340.9	343.9	5.0	14.9	10.2	9.0	5	98.9	76
1050			1633	340.9	343.9	5.0	15.1	10.2	10.0	5	98.9	76
1051			1631	340.9	343.9	5.0	15.2	10.6	9.6	5	98.9	76
1052			1622	340.9	343.9	5.0	15.0	11.4	7.8	5	98.9	76
1053			1626	340.9	343.9	5.0	15.1	10.7	7.8	5	98.9	76
1054			1606	340.9	343.9	5.0	14.8	10.1	9.3	5	98.9	76
1055			1634	340.9	343.9	5.0	15.0	10.1	8.8	5	98.9	76
1056			1622	340.9	343.9	5.0	15.0	11.2	9.3	5	98.9	76

Table E.01 Measurement data - Turbine ON

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 11/1/2017

***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 (%)
1057			1622	340.9	343.9	5.0	14.9	10.1	10.2	5	98.9	76
1058			1621	340.9	343.9	5.0	14.8	8.7	9.6	5	98.9	76
1059	10.1	53.6	1638	340.9	343.9	5.0	15.1	9.9	9.1	5	98.9	76
1060	10.5	54.5	1637	340.9	343.9	5.0	15.2	10.4	10.2	5	98.9	76
1061	10.1	54.4	1615	340.9	343.9	5.0	15.0	9.9	9.8	5	98.9	76
1062			1600	340.9	343.9	5.0	14.7	8.3	8.7	5	98.9	76
1063	9.8	53.3	1630	340.9	343.9	5.0	14.8	9.6	8.4	5	98.9	75
1064			1639	340.9	343.9	5.0	15.0	9.1	9.5	5	98.9	75
1065			1649	340.9	343.9	5.0	15.3	8.7	8.5	5	98.9	75
1066			1633	340.9	343.9	5.0	15.4	9.1	8.3	5	98.9	75
1067			1615	340.9	343.9	5.0	15.2	9.1	7.9	5	98.9	75
1068			1590	340.9	343.9	5.0	14.7	7.9	8.7	5	98.9	75
1069			1607	340.9	343.9	5.0	14.5	8.3	9.2	5	98.9	77
1070	9.9	53.7	1679	340.9	343.9	5.0	15.5	9.7	9.1	5	98.9	77
1071	10.5	54.7	1654	340.9	343.9	5.0	15.7	10.3	8.6	5	98.9	77
1072	9.8	55.0	1613	340.9	343.9	5.0	15.4	9.6	9.5	5	98.9	77
1073			1606	340.9	343.9	5.0	15.0	8.1	11.0	5	98.9	77
1074	10.0	53.8	1625	340.9	343.9	5.0	15.1	9.8	9.9	5	98.9	76
1075	9.9	54.1	1625	340.9	343.9	5.0	15.1	9.8	7.9	5	98.9	75
1076	10.8	54.0	1621	340.9	343.9	5.0	15.1	10.6	7.8	5	98.9	75
1077	10.9	54.1	1621	340.9	343.9	5.0	15.0	10.7	7.9	5	98.9	75
1078	10.1	54.6	1627	340.9	343.9	5.0	15.0	9.9	7.1	5	98.9	75
1079	10.1	53.9	1627	340.9	343.9	5.0	15.0	10.0	8.4	5	98.9	75
1080	11.1	53.8	1631	340.9	343.9	5.0	15.2	10.9	8.6	5	98.9	75
1081	10.5	54.3	1618	340.9	343.9	5.0	15.0	10.3	7.7	5	98.9	75
1082	10.1	54.0	1623	340.9	343.9	5.0	15.0	9.9	7.7	5	98.9	75
1083	9.5	53.6	1629	340.9	343.9	5.0	15.0	9.3	8.0	5	98.9	75
1084	10.0	54.2	1616	340.9	343.9	5.0	14.9	9.9	8.2	5	98.9	75
1085	10.0	53.6	1632	340.9	343.9	5.0	15.2	9.9	8.0	5	98.9	75
1086	10.6	54.2	1630	340.9	343.9	5.0	15.2	10.4	9.5	5	98.9	75
1087	9.6	54.5	1622	340.9	343.9	5.0	15.1	9.5	10.1	5	98.9	75
1088	10.1	54.0	1626	340.9	343.9	5.0	15.2	9.9	10.3	5	98.9	75
1089	10.6	54.6	1619	340.9	343.9	5.0	15.1	10.4	11.2	5	98.9	75
1090	10.2	54.1	1626	340.9	343.9	5.0	15.1	10.0	9.5	5	98.9	75
1091	10.1	54.4	1629	340.9	343.9	5.0	15.2	10.0	8.8	5	98.9	75
1092	10.9	54.0	1615	340.9	343.9	5.0	15.0	10.8	8.9	5	98.9	75
1093	9.8	54.2	1619	340.9	343.9	5.0	14.9	9.7	9.3	5	98.9	76
1094	10.8	53.8	1629	340.9	343.9	5.0	15.0	10.6	9.9	5	98.9	76
1095	10.0	54.1	1623	340.9	343.9	5.0	14.9	9.9	9.8	5	98.9	76
1096	9.6	54.0	1630	340.9	343.9	5.0	15.0	9.4	10.0	5	98.9	76
1097	9.8	54.2	1627	340.9	343.9	5.0	15.0	9.6	8.8	5	98.9	76
1098	10.1	54.4	1630	340.9	343.9	5.0	15.1	9.9	8.9	5	98.9	76
1099	10.0	54.9	1613	340.9	343.9	5.0	14.9	9.8	8.7	5	98.9	75
1100			1620	340.9	343.9	5.0	14.8	8.8	8.9	5	98.9	75
1101			1634	340.9	343.9	5.0	15.0	8.2	8.8	5	98.9	75
1102	9.3	53.9	1628	340.9	340.9	5.0	15.0	9.2	9.3	5	98.9	75
1103			1631	340.9	338.0	5.0	15.1	8.5	9.1	5	98.9	75
1104			1626	340.9	338.0	5.0	15.0	9.0	7.0	5	98.9	76
1105	9.6	54.5	1641	340.9	338.0	5.0	15.4	9.5	7.8	5	98.9	77
1106	10.4	54.2	1617	340.9	338.0	5.0	15.2	10.2	7.0	5	98.9	77
1107	10.0	54.2	1614	340.9	338.0	5.0	15.0	9.9	7.4	5	98.9	77
1108	9.6	53.8	1608	340.9	338.0	5.0	14.8	9.5	7.9	5	98.9	77
1109			1632	340.9	338.0	5.0	14.9	8.9	8.1	5	98.9	77
1110	10.7	54.1	1642	340.9	338.0	5.0	15.3	10.6	8.0	5	98.9	77
1111	10.7	54.1	1628	340.9	338.0	5.0	15.2	10.5	7.3	5	98.9	76
1112	9.7	54.1	1606	340.9	338.0	5.0	14.9	9.5	7.2	5	98.9	76
1113	9.6	53.9	1623	340.9	338.0	5.0	15.0	9.5	7.6	5	98.9	76
1114	9.5	53.8	1615	340.9	338.0	5.0	14.8	9.3	6.8	5	98.9	76
1115	10.4	53.4	1628	340.9	338.0	5.0	14.9	10.2	7.4	5	98.9	76
1116	9.6	53.8	1638	340.9	338.0	5.0	15.1	9.4	6.5	5	98.9	76
1117	9.6	54.3	1626	340.9	338.0	5.0	15.1	9.5	6.7	5	98.9	77
1118			1562	340.9	338.0	5.0	14.8	8.4	7.5	5	98.9	77
1119			1537	340.9	338.0	5.0	15.0	8.3	6.8	5	98.9	77
1120	8.8	53.4	1433	340.9	338.0	5.0	14.9	7.9	6.3	5	98.9	77
1121	8.5	52.6	1335	340.9	338.0	5.0	14.4	7.6	7.1	5	98.9	77
1122			1591	340.9	338.0	5.0	14.9	8.4	7.7	5	98.9	76
1123	8.9	54.0	1463	340.9	338.0	5.0	14.9	8.8	7.7	5	98.9	76
1124			1527	340.9	338.0	5.0	14.8	9.0	8.5	5	98.9	76
1125			1642	340.9	338.0	5.0	15.3	9.0	9.4	5	98.9	76
1126			1598	340.9	338.0	5.0	14.9	7.9	9.0	5	98.9	76
1127			1662	340.9	338.0	5.0	15.7	8.1	9.8	5	98.9	76
1128			1609	340.9	338.0	5.0	15.4	8.7	9.4	5	98.9	75
1129			1606	340.9	338.0	5.0	15.2	8.8	9.0	5	98.9	74
1130	9.8	53.5	1607	340.9	338.0	5.0	14.9	9.7	9.1	5	98.9	74
1131	10.3	54.0	1632	340.9	338.0	5.0	15.2	10.2	10.1	5	98.9	74
1132	10.1	53.8	1628	340.9	338.0	5.0	15.1	9.9	10.8	5	98.9	74
1133	10.2	54.1	1633	340.9	338.0	5.0	15.3	10.1	9.6	5	98.9	74
1134	11.3	54.6	1630	340.9	338.0	5.0	15.4	11.1	9.4	5	98.9	74
1135	10.1	54.0	1608	340.9	338.0	5.0	15.0	10.0	9.0	5	98.9	74
1136	11.4	54.1	1623	340.9	338.0	5.0	15.1	11.3	8.7	5	98.9	74
1137	10.3	54.0	1608	340.9	338.0	5.0	14.8	10.2	8.6	5	98.9	74
1138	9.6	53.6	1604	340.9	338.0	5.0	14.5	9.4	8.0	5	98.9	74
1139			1621	340.9	338.0	5.0	14.6	8.9	7.7	5	98.9	74
1140			1629	340.9	338.0	5.0	14.6	8.2	6.9	5	98.9	75
1141			1626	340.9	339.4	5.0	14.6	8.5	6.5	5	98.9	76
1142			1677	340.9	343.9	5.0	15.3	8.9	9.0	5	98.9	76
1143	9.6	54.3	1639	340.9	343.9	5.0	15.5	9.4	8.7	5	98.9	76
1144	9.4	54.3	1646	340.9	343.9	5.0	15.7	9.3	10.0	5	98.9	76

***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 (%)
1145	9.9	54.6	1612	340.9	343.9	5.0	15.4	9.8	10.2	5	98.9	76
1146	9.8	54.2	1609	340.9	343.9	5.0	15.2	9.7	9.9	5	98.9	76
1147	10.4	53.9	1617	340.9	343.9	5.0	15.2	10.2	10.2	5	98.9	77
1148	11.1	54.1	1615	340.9	343.9	5.0	15.0	10.9	9.6	5	98.9	77
1149	10.1	53.7	1623	340.9	343.9	5.0	15.0	10.0	9.6	5	98.9	77
1150	9.7	54.1	1619	340.9	343.9	5.0	14.9	9.6	9.2	5	98.9	77
1151	9.5	53.6	1623	340.9	343.9	5.0	14.9	9.4	8.1	5	98.9	77
1152			1625	340.9	343.9	5.0	14.9	9.0	7.6	5	98.9	76
1153			1626	340.9	343.9	5.0	14.9	8.9	8.0	5	98.9	75
1154	9.6	54.7	1637	340.9	343.9	5.0	15.1	9.4	9.9	5	98.9	75
1155			1623	340.9	343.9	5.0	15.0	9.0	8.3	5	98.9	75
1156			1636	340.9	343.9	5.0	15.2	8.8	7.2	5	98.9	75
1157	9.9	54.7	1629	340.9	343.3	5.0	15.2	9.8	7.7	5	98.9	75
1158	9.4	54.2	1623	340.9	337.9	5.0	15.1	9.3	8.1	5	98.9	75
1159	9.5	53.8	1623	340.9	335.1	5.0	15.1	9.3	7.6	5	98.9	76
1160			1620	340.9	335.1	5.0	15.0	8.3	7.6	5	98.9	76
1161	9.6	54.0	1629	340.9	335.1	5.0	15.1	9.5	7.8	5	98.9	76
1162	10.5	54.1	1619	340.9	335.1	5.0	15.1	10.3	7.6	5	98.9	76
1163			1605	340.9	335.1	5.0	14.8	8.9	8.2	5	98.9	76
1164	9.3	53.8	1625	340.9	335.1	5.0	14.9	9.2	7.6	5	98.9	76
1165	10.7	53.4	1645	340.9	335.1	5.0	15.2	10.5	7.1	5	98.9	76
1166	9.5	53.5	1585	340.9	335.1	5.0	14.7	9.4	6.3	5	98.9	76
1167			1577	340.9	335.1	5.0	14.2	8.1	6.2	5	98.9	76
1168			1536	340.9	335.1	5.0	14.4	8.9	7.2	5	98.9	76
1169	8.9	53.2	1452	340.9	335.1	5.0	14.6	9.3	9.0	5	98.9	76
1170	9.2	53.2	1502	340.9	335.1	5.0	14.8	8.2	8.1	5	98.9	76
1171	9.1	53.8	1494	340.9	335.1	5.0	14.7	8.7	6.6	5	98.9	76
1172			1525	340.9	335.1	5.0	14.9	7.9	8.6	5	98.9	76
1173	9.0	53.5	1470	340.9	335.1	5.0	14.7	8.1	7.2	5	98.9	76
1174			1552	340.9	335.1	5.0	14.7	8.5	7.1	5	98.9	76
1175	10.1	54.3	1656	340.9	335.1	5.0	15.4	9.9	6.5	5	98.9	76
1176			1590	340.9	335.1	5.0	15.0	8.3	6.8	5	98.9	76
1177			1552	340.9	335.1	5.0	14.6	9.0	7.1	5	98.9	78
1178	8.6	52.9	1383	340.9	335.1	5.0	14.4	8.0	7.8	5	98.9	78
1179	8.1	52.7	1251	340.9	335.1	5.0	13.9	7.5	8.0	5	98.9	78
1180	7.9	52.2	1186	340.9	335.1	5.0	13.7	7.4	8.0	5	98.9	78
1181	7.9	52.0	1181	340.9	335.1	5.0	13.7	7.1	7.0	5	98.9	78
1182	7.8	52.3	1154	340.9	335.1	5.0	13.5	7.6	6.7	5	98.9	78
1183	8.4	52.8	1317	340.9	335.1	5.0	14.3	8.5	6.2	5	98.9	78
1184	8.4	53.0	1309	340.9	336.5	5.0	14.1	7.3	6.5	5	98.9	78
1185	8.3	52.4	1294	340.9	343.0	5.0	14.0	8.9	7.0	5	98.9	78
1186	8.7	53.3	1398	340.9	346.8	5.0	14.5	8.5	6.6	5	98.9	78
1187	8.6	53.9	1361	340.9	346.8	5.0	14.3	9.2	6.6	5	98.9	78
1188			1531	340.9	346.8	5.0	14.7	8.5	7.9	5	98.9	78
1189			1626	340.9	346.8	5.0	15.1	8.2	7.6	5	98.9	77
1190	9.5	55.5	1656	340.9	346.8	5.0	15.6	9.4	6.9	5	98.9	77
1191			1536	340.9	346.8	5.0	14.8	8.0	7.7	5	98.9	77
1192			1575	340.9	346.8	5.0	14.4	8.0	7.5	5	98.9	77
1193	9.2	53.4	1499	340.9	346.8	5.0	14.5	9.0	8.4	5	98.9	77
1194			1667	340.9	346.8	5.0	15.5	8.7	6.9	5	98.9	77
1195			1634	340.9	346.8	5.0	15.5	7.5	7.3	5	98.9	77
1196			1602	340.9	346.8	5.0	15.4	8.3	7.9	5	98.9	77
1197	8.8	53.8	1431	340.9	346.8	5.0	14.8	6.0	8.5	5	98.9	77
1198	8.5	52.8	1336	340.9	346.8	5.0	14.5	7.8	7.6	5	98.9	77
1199	8.4	52.7	1322	340.9	346.8	5.0	14.5	7.7	8.1	5	98.9	77
1200	7.9	52.1	1172	340.9	346.8	5.0	13.8	5.8	7.9	5	98.9	77
1201	8.0	51.7	1218	340.9	346.8	5.0	14.2	7.2	7.6	5	98.9	76
1202			1634	340.9	346.8	5.0	15.4	8.9	7.5	5	98.9	76
1203	9.3	54.7	1618	340.9	346.8	5.0	15.3	9.1	7.1	5	98.9	76
1204	10.1	54.2	1605	340.9	346.8	5.0	15.1	9.9	7.1	5	98.9	76
1205			1580	340.9	346.8	5.0	14.6	8.7	8.0	5	98.9	76
1206			1638	340.9	346.8	5.0	14.9	7.5	9.3	5	98.9	76
1207			1617	340.9	346.8	5.0	15.0	7.2	9.7	5	98.9	75
1208			1587	340.9	346.8	5.0	14.5	7.8	9.5	5	98.9	75
1209			1551	340.9	346.8	5.0	14.6	7.6	9.3	5	98.9	75
1210	10.4	54.4	1622	340.9	346.8	5.0	15.5	10.2	9.0	5	98.9	75
1211			1555	340.9	346.8	5.0	14.7	8.9	8.9	5	98.9	75
1212	9.4	53.9	1619	340.9	346.8	5.0	15.0	9.3	8.1	5	98.9	75
1213	9.4	53.8	1638	340.9	346.8	5.0	15.1	9.3	7.8	5	98.9	75
1214	10.2	54.4	1625	340.9	346.8	5.0	15.1	10.0	7.6	5	98.9	75
1215	9.4	53.8	1615	340.9	346.8	5.0	14.9	9.3	6.7	5	98.9	75
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Table E.02 Measurement data - Background

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/12/2017

***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	8.0	31.2	0.0	6.9	1	99.1	52
2	6.4	32.8	0.0	5.6	1	99.1	52
3	6.8	32.9	0.0	5.9	1	99.1	52
4	7.3	33.7	0.0	6.3	1	99.1	52
5	8.4	34.3	0.0	7.3	1	99.1	52
6	7.1	34.9	0.0	6.2	1	99.1	52
7	5.6	34.3	0.0	4.8	1	99.1	51
8	6.3	33.5	0.0	5.4	1	99.1	51
9	6.0	34.2	0.0	5.3	1	99.1	51
10	5.6	33.8	0.0	4.8	1	99.1	51
11	6.0	34.0	0.0	5.2	1	99.1	51
12	5.3	36.7	0.0	4.6	1	99.1	50
13			0.0	4.9	1	99.1	49
14			0.0	5.1	1	99.1	49
15			0.0	4.8	1	99.1	49
16	5.3	31.0	0.0	4.6	1	99.1	49
17	4.2	31.0	0.0	3.7	1	99.1	49
18	4.9	36.2	0.0	4.3	1	99.1	50
19	6.4	30.9	0.0	5.5	1	99.1	53
20	6.3	31.0	0.0	5.5	1	99.1	53
21	6.9	31.3	0.0	6.0	1	99.1	53
22	7.4	31.3	0.0	6.4	1	99.1	53
23	7.0	33.2	0.0	6.1	1	99.1	53
24	7.4	31.9	0.0	6.5	1	99.1	52
25	8.6	31.6	0.0	7.5	1	99.1	50
26	8.8	32.3	0.0	7.6	1	99.1	50
27	8.1	34.0	0.0	7.0	1	99.1	50
28	7.1	36.9	0.0	6.2	1	99.1	50
29	7.6	35.0	0.0	6.6	1	99.1	50
30	6.8	33.7	0.0	5.9	1	99.1	50
31	7.2	36.1	0.0	6.2	1	99.1	51
32	6.9	36.2	0.0	6.0	1	99.1	51
33	5.1	37.0	0.0	4.5	1	99.1	51
34	5.3	36.9	0.0	4.6	1	99.1	51
35	5.2	36.2	0.0	4.5	1	99.1	51
36	6.6	33.6	0.0	5.7	1	99.1	50
37	6.7	34.0	0.0	5.8	1	99.1	49
38	7.4	33.8	0.0	6.5	1	99.1	49
39	6.6	31.8	0.0	5.8	1	99.1	49
40	6.2	31.5	0.0	5.4	1	99.1	49
41	6.5	31.1	0.0	5.6	1	99.1	49
42	5.5	34.1	0.0	4.8	1	99.1	49
43			0.0	4.2	1	99.1	47
44			0.0	4.1	1	99.1	47
45			0.0	6.1	1	99.1	47
46			0.0	6.1	1	99.1	47
47			0.0	6.0	1	99.1	47
48			0.0	6.9	1	99.1	49
49	7.2	31.4	0.0	6.3	1	99.1	52
50	7.8	31.5	0.0	6.8	1	99.1	52
51	8.8	31.8	0.0	7.6	1	99.1	52
52	8.3	33.2	0.0	7.2	1	99.1	52
53	7.3	33.1	0.0	6.4	1	99.1	52
54	6.4	34.3	0.0	5.6	1	99.1	51
55	7.3	35.0	0.0	6.3	1	99.1	51
56	7.7	35.0	0.0	6.7	1	99.1	51
57	7.3	34.1	0.0	6.4	1	99.1	51
58	8.2	34.2	0.0	7.2	1	99.1	51
59	7.4	33.9	0.0	6.5	1	99.1	51
60	7.6	33.0	0.0	6.6	1	99.1	51
61	6.7	33.3	0.0	5.8	1	99.1	51
62	6.5	34.8	0.0	5.7	1	99.1	51
63	7.1	35.3	0.0	6.2	1	99.1	51
64	6.4	36.5	0.0	5.6	1	99.1	51
65	5.8	35.0	0.0	5.0	1	99.1	51
66	5.2	35.8	0.0	4.5	1	99.1	50
67	5.2	36.1	0.0	4.5	1	99.1	48
68			0.0	4.7	1	99.1	48
69			0.0	5.9	1	99.1	48
70			0.0	6.1	1	99.1	48
71			0.0	6.5	1	99.1	48
72			0.0	5.8	1	99.1	49
73	6.8	32.1	0.0	5.9	1	99.1	51
74	6.7	32.6	0.0	5.8	1	99.1	51
75	6.2	33.1	0.0	5.4	1	99.1	51
76	6.1	34.3	0.0	5.3	1	99.1	51
77	6.1	34.7	0.0	5.3	1	99.1	51
78	6.9	33.4	0.0	6.0	1	99.1	50
79	6.5	32.4	0.0	5.7	1	99.1	49
80			0.0	5.6	1	99.1	49
81			0.0	6.5	1	99.1	49
82			0.0	6.3	1	99.1	49
83			0.0	6.9	1	99.1	49

***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			0.0	6.4	1	99.1	50
85			0.0	7.5	1	99.1	51
86			0.0	7.5	1	99.1	51
87			0.0	6.4	1	99.1	51
88			0.0	6.1	1	99.2	51
89			0.0	5.9	1	99.1	51
90			0.0	5.5	1	99.1	50
91			0.0	6.3	1	99.1	47
92			0.0	6.0	1	99.1	47
93			0.0	6.6	1	99.1	47
94			0.0	6.0	1	99.1	47
95			0.0	5.4	1	99.1	47
96			0.0	5.6	1	99.1	48
97			0.0	5.1	1	99.1	48
98			0.0	6.1	1	99.1	48
99			0.0	6.1	1	99.1	48
100			0.0	5.8	1	99.1	48
101			0.0	5.9	1	99.1	48
102			0.0	5.8	1	99.1	48
103			0.0	6.3	1	99.2	47
104			0.0	6.9	1	99.2	47
105			0.0	7.1	1	99.2	47
106			0.0	5.8	1	99.2	47
107			0.0	6.0	1	99.2	47
108			0.0	5.8	1	99.2	48
109			0.0	5.7	1	99.2	50
110	6.5	33.6	0.0	5.6	1	99.2	50
111	6.1	33.4	0.0	5.3	1	99.2	50
112	7.9	34.0	0.0	6.9	1	99.2	50
113	7.9	33.0	0.0	6.8	1	99.2	50
114	6.2	33.9	0.0	5.3	1	99.2	50
115	6.7	36.1	0.0	5.8	1	99.1	50
116	7.6	33.3	0.0	6.6	1	99.2	50
117	6.3	34.1	0.0	5.5	1	99.2	50
118			0.0	6.4	1	99.2	50
119			0.0	5.5	1	99.1	50
120			0.0	6.6	1	99.2	49
121			0.0	7.1	1	99.1	47
122			0.0	7.9	1	99.1	47
123			0.0	7.8	1	99.2	47
124			0.0	7.0	1	99.2	47
125			0.0	6.5	1	99.2	47
126			0.0	6.5	1	99.2	47
127			0.0	7.4	1	99.2	48
128			0.0	7.8	1	99.2	48
129			0.0	8.6	1	99.2	48
130			0.0	8.5	1	99.2	48
131			0.0	8.4	1	99.2	48
132			0.0	6.1	1	99.2	48
133			0.0	5.8	1	99.2	48
134			0.0	6.5	1	99.2	48
135	6.9	35.6	0.0	6.0	1	99.2	48
136	8.2	34.5	0.0	7.1	1	99.2	48
137	9.2	33.9	0.0	8.0	1	99.2	48
138	7.7	36.0	0.0	6.7	1	99.2	49
139	6.0	36.9	0.0	5.2	1	99.2	50
140	5.6	37.3	0.0	4.8	1	99.2	50
141	6.3	36.8	0.0	5.4	1	99.2	50
142	6.5	34.6	0.0	5.6	1	99.2	50
143	6.5	33.9	0.0	5.6	1	99.1	50
144	5.1	35.8	0.0	4.4	1	99.1	51
145	6.1	34.2	0.0	5.3	1	99.1	52
146	7.2	34.5	0.0	6.2	1	99.1	52
147	8.7	33.1	0.0	7.6	1	99.1	52
148	8.9	32.0	0.0	7.7	1	99.1	52
149			0.0	7.3	1	99.1	52
150			0.0	7.3	1	99.1	50
151			0.0	5.9	1	99.1	45
152			0.0	6.7	1	99.1	45
153			0.0	6.7	1	99.1	45
154			0.0	7.0	1	99.1	45
155			0.0	7.8	1	99.1	45
156			0.0	6.9	1	99.1	46
157			0.0	7.0	1	99.1	46
158			0.0	7.0	1	99.1	46
159			0.0	5.5	1	99.1	46
160			0.0	6.4	1	99.1	46
161			0.0	5.1	1	99.2	46
162			0.0	4.9	1	99.1	48
163	7.5	35.0	0.0	6.5	1	99.1	51
164	8.1	36.4	0.0	7.1	1	99.1	51
165	7.0	35.2	0.0	6.1	1	99.1	51
166	7.9	33.4	0.0	6.9	1	99.1	51

***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	7.5	33.9	0.0	6.5	1	99.2	51
168	8.0	32.9	0.0	6.9	1	99.1	50
169	6.8	35.1	0.0	5.9	1	99.2	48
170	6.3	32.9	0.0	5.5	1	99.1	48
171	6.8	31.9	0.0	5.9	1	99.1	48
172	7.4	33.0	0.0	6.5	1	99.1	48
173			0.0	5.2	1	99.2	48
174			0.0	5.1	1	99.2	49
175			0.0	5.1	1	99.2	52
176			0.0	5.4	1	99.2	52
177			0.0	5.3	1	99.2	52
178			0.0	4.7	1	99.2	52
179			0.0	4.8	1	99.2	52
180	5.1	32.4	0.0	4.5	1	99.2	51
181	5.3	31.8	0.0	4.6	1	99.2	50
182	5.2	34.4	0.0	4.5	1	99.2	50
183	6.5	34.6	0.0	5.6	1	99.2	50
184	6.0	33.5	0.0	5.2	1	99.2	50
185	5.1	34.5	0.0	4.5	1	99.2	50
186	5.3	33.0	0.0	4.6	1	99.2	51
187	4.3	33.0	0.0	3.8	2	99.2	52
188	4.6	34.4	0.0	4.0	2	99.2	52
189	4.7	34.6	0.0	4.1	2	99.2	52
190	4.0	35.3	0.0	3.5	2	99.2	52
191	4.1	32.3	0.0	3.6	2	99.2	52
192	4.3	34.8	0.0	3.8	2	99.2	53
193	5.6	34.4	0.0	4.8	2	99.2	55
194			0.0	4.4	2	99.2	55
195			0.0	4.9	2	99.2	55
196			0.0	4.6	2	99.2	55
197			0.0	4.4	2	99.2	55
198			0.0	6.1	2	99.2	54
199			0.0	6.5	2	99.2	53
200			0.0	7.6	2	99.2	53
201			0.0	7.5	2	99.2	53
202			0.0	7.5	2	99.2	53
203			0.0	7.9	2	99.2	53
204			0.2	8.0	2	99.2	51
205	7.8	38.9	0.5	6.8	2	99.2	42
206	8.6	36.6	0.4	7.5	2	99.2	42
207	8.8	37.4	0.3	7.6	2	99.2	42
208	8.1	33.8	0.3	7.1	2	99.2	42
209	8.1	32.3	0.3	7.0	2	99.2	42
210	7.1	32.5	0.3	6.1	2	99.2	42
211	7.0	33.8	0.3	6.1	2	99.2	43
212	7.7	36.1	0.3	6.7	2	99.2	43
213	8.4	35.3	0.3	7.3	2	99.2	43
214	8.3	33.5	0.3	7.2	2	99.2	43
215	7.4	32.0	0.4	6.4	2	99.2	43
216	6.8	32.4	0.4	5.9	2	99.2	42
217	7.5	33.9	0.3	6.6	2	99.2	42
218	7.0	37.3	0.2	6.1	2	99.2	42
219	7.3	37.8	0.3	6.3	2	99.2	42
220	6.4	36.1	0.5	5.5	2	99.2	42
221	6.1	34.5	0.5	5.3	2	99.2	42
222	5.6	34.5	0.4	4.9	2	99.2	44
223	7.0	32.2	0.3	6.1	2	99.2	47
224	7.1	33.8	0.4	6.2	2	99.2	47
225	8.1	34.6	0.5	7.1	2	99.2	47
226	9.0	35.0	0.4	7.8	2	99.2	47
227	8.7	35.4	0.3	7.6	2	99.2	47
228	8.1	34.7	0.5	7.1	2	99.2	46
229			0.4	6.7	2	99.2	43
230			0.4	5.9	2	99.2	43
231			0.4	5.4	2	99.2	43
232			0.3	4.8	2	99.2	43
233			0.3	6.8	2	99.2	43
234			0.5	7.2	2	99.2	44
235	8.7	35.5	0.4	7.5	2	99.2	46
236	9.5	34.6	0.4	8.3	2	99.2	46
237	7.2	34.4	0.3	6.2	2	99.2	46
238	7.2	33.5	0.3	6.3	2	99.2	46
239	8.2	33.7	0.5	7.1	2	99.2	46
240	8.3	36.9	0.5	7.2	2	99.2	45
241	8.9	36.2	0.4	7.8	2	99.2	43
242	7.6	36.4	0.4	6.6	2	99.2	43
243	7.0	35.4	0.3	6.1	2	99.2	43
244	6.6	33.4	0.3	5.8	2	99.2	43
245	6.5	32.5	0.2	5.7	2	99.2	43
246	7.5	32.3	0.2	6.5	2	99.2	43
247	7.3	37.5	0.3	6.4	2	99.2	44
248	4.6	34.9	0.5	4.0	2	99.2	44
249	4.6	37.4	0.4	4.0	2	99.2	44

Table E.02 Measurement data - Background

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/12/2017

***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	6.0	38.3	0.4	5.2	2	99.2	44
251	8.1	37.1	0.3	7.0	2	99.2	44
252	8.4	36.6	0.2	7.3	2	99.2	43
253	6.4	33.7	0.3	5.5	2	99.2	42
254	6.7	31.8	0.2	5.8	2	99.2	42
255	7.1	31.9	0.4	6.2	2	99.2	42
256	6.3	31.8	0.5	5.5	2	99.2	42
257	6.6	31.8	0.5	5.7	2	99.2	42
258	6.6	32.1	0.4	5.7	2	99.2	42
259	5.1	33.5	0.4	4.5	3	99.2	42
260	7.2	36.3	0.4	6.3	3	99.2	42
261	6.7	38.7	0.3	5.9	3	99.2	42
262	6.9	33.4	0.2	6.0	3	99.2	42
263	6.0	33.4	0.3	5.2	3	99.2	42
264	6.2	32.3	0.3	5.4	3	99.2	42
265	7.0	32.1	0.3	6.1	3	99.2	42
266	8.2	31.5	0.3	7.1	3	99.2	42
267	9.9	31.9	0.1	8.6	3	99.2	42
268	9.0	31.9	0.2	7.8	3	99.2	42
269	7.6	34.2	0.5	6.6	3	99.2	42
270	9.9	33.7	0.4	8.6	2	99.2	43
271	9.5	35.2	0.3	8.3	2	99.2	43
272	8.7	39.3	0.3	7.5	2	99.2	43
273	10.8	39.6	0.5	9.4	2	99.2	43
274	9.9	38.5	0.5	8.6	2	99.2	43
275	8.9	36.1	0.5	7.8	2	99.2	43
276	10.5	34.5	0.5	9.2	2	99.2	43
277	8.8	35.5	0.6	7.6	2	99.2	44
278	8.2	37.9	0.4	7.1	2	99.2	44
279	7.6	38.1	0.4	6.6	2	99.2	44
280	7.0	37.8	0.3	6.0	2	99.2	44
281	8.2	42.8	0.4	7.1	2	99.2	44
282	8.1	39.4	0.6	7.1	2	99.2	42
283	6.8	37.0	0.7	5.9	2	99.2	40
284	7.0	36.4	0.5	6.1	2	99.2	40
285	8.3	33.7	0.4	7.2	2	99.2	40
286	9.0	32.6	0.3	7.8	2	99.2	40
287	8.9	33.4	0.3	7.8	2	99.2	40
288	7.8	34.6	0.3	6.8	2	99.2	40
289	6.5	35.2	0.3	5.6	2	99.2	41
290	7.1	32.9	0.2	6.2	2	99.2	41
291	9.9	34.0	0.3	8.6	2	99.2	41
292	8.4	37.1	0.3	7.3	2	99.2	41
293	7.5	35.0	0.4	6.5	2	99.2	41
294	7.5	33.6	0.4	6.5	2	99.2	41
295	6.3	32.7	0.4	5.5	2	99.2	41
296	5.6	34.4	0.3	4.9	2	99.2	41
297	5.5	33.3	0.2	4.8	2	99.2	41
298	5.7	37.3	0.3	5.0	2	99.2	41
299	5.6	35.1	0.3	4.9	2	99.2	41
300	6.3	34.2	0.4	5.5	2	99.2	42
301	5.1	34.5	0.5	4.4	2	99.2	43
302	7.8	35.9	0.4	6.8	2	99.2	43
303	8.7	33.1	0.4	7.6	2	99.2	43
304	8.5	38.9	0.5	7.4	2	99.2	43
305	8.3	36.9	0.5	7.2	2	99.2	43
306	8.7	39.1	0.5	7.6	2	99.2	42
307	8.4	38.0	0.3	7.3	2	99.2	42
308	8.1	38.1	0.3	7.1	2	99.2	42
309	9.2	35.0	0.4	8.0	2	99.2	42
310	9.3	33.4	0.1	8.1	2	99.2	42
311	9.3	34.0	0.1	8.1	2	99.2	42
312	8.5	34.2	0.4	7.4	2	99.2	44
313	9.0	35.2	0.5	7.8	2	99.2	46
314	9.0	35.8	0.9	7.8	2	99.2	46
315	8.9	38.9	0.8	7.8	2	99.2	46
316	10.9	37.6	0.6	9.5	2	99.2	46
317	11.3	38.6	0.4	9.8	2	99.2	46
318	9.6	42.6	0.4	8.3	2	99.2	45
319	9.9	40.1	0.4	8.6	2	99.2	42
320	9.5	36.5	0.4	8.3	2	99.2	42
321	9.7	33.7	0.3	8.4	2	99.2	42
322	7.8	35.7	0.3	6.8	2	99.2	42
323	6.5	36.8	0.4	5.7	2	99.2	42
324	7.6	37.2	0.3	6.6	2	99.2	42
325	8.4	37.4	0.3	7.3	2	99.2	41
326	8.0	35.8	0.4	6.9	2	99.2	41
327	8.0	35.2	0.4	7.0	2	99.2	41
328	7.7	34.1	0.4	6.7	2	99.2	41
329	7.8	34.1	0.3	6.7	2	99.2	41
330	7.4	34.7	0.3	6.5	2	99.2	41
331			0.3	5.7	2	99.2	40
332			0.5	5.5	2	99.2	40

***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			0.5	4.7	2	99.2	40
334			0.5	5.5	2	99.2	40
335			0.0	5.6	2	99.2	40
336			0.0	5.4	2	99.2	42
337			0.0	5.1	2	99.2	44
338			0.0	5.0	2	99.2	44
339			0.3	4.6	2	99.2	44
340			0.4	4.1	2	99.2	44
341			0.5	4.8	2	99.2	44
342	6.3	34.3	0.4	5.5	2	99.2	43
343	6.6	35.7	0.4	5.7	2	99.2	43
344	9.1	36.0	0.4	7.9	2	99.2	43
345	9.4	36.0	0.4	8.2	2	99.2	43
346	8.6	34.9	0.3	7.4	2	99.2	43
347	7.8	37.2	0.4	6.8	2	99.2	43
348	9.1	34.8	0.4	7.9	2	99.2	42
349	8.2	40.0	0.3	7.1	2	99.2	40
350	8.6	41.5	0.2	7.5	2	99.2	40
351	7.6	39.2	0.4	6.6	2	99.2	40
352	7.9	37.1	0.6	6.8	2	99.2	40
353	8.7	37.4	0.6	7.6	2	99.2	40
354	9.8	35.4	0.4	8.5	2	99.2	40
355	9.8	35.9	0.6	8.6	2	99.2	41
356	8.7	35.5	0.7	7.5	2	99.2	41
357	8.7	35.4	0.6	7.6	2	99.2	41
358	8.7	34.8	0.4	7.6	2	99.2	41
359	8.0	36.8	0.6	6.9	2	99.2	41
360	10.0	36.5	0.5	8.7	2	99.2	42
361	10.2	36.9	0.5	8.8	2	99.2	43
362	10.2	36.8	0.6	8.8	2	99.2	43
363	9.2	38.5	0.6	8.0	2	99.2	43
364	8.9	39.8	0.6	7.8	2	99.2	43
365	7.9	41.9	0.4	6.9	2	99.2	43
366	8.3	40.8	0.5	7.2	2	99.2	42
367	8.8	40.1	0.5	7.7	2	99.2	42
368	7.0	39.8	0.4	6.1	2	99.2	42
369	7.2	38.5	0.3	6.2	2	99.2	42
370	7.5	39.5	0.3	6.5	2	99.2	42
371	8.1	38.6	0.3	7.0	2	99.2	42
372	9.6	38.1	0.5	8.4	2	99.2	42
373	10.1	37.3	0.6	8.8	2	99.2	43
374	8.7	35.5	0.5	7.5	2	99.2	43
375	9.8	34.8	0.4	8.5	2	99.2	43
376	9.9	38.6	0.7	8.6	2	99.2	43
377	9.0	40.0	0.6	7.8	2	99.2	43
378			0.5	8.5	2	99.2	43
379			0.6	7.4	2	99.2	41
380			0.4	6.6	2	99.2	41
381			0.4	6.7	2	99.2	41
382			0.5	6.1	2	99.2	41
383			0.4	6.3	2	99.2	41
384			0.4	7.2	2	99.2	42
385	7.7	39.3	0.4	6.7	2	99.2	43
386	6.3	36.1	0.4	5.5	2	99.2	43
387	6.4	36.3	0.4	5.5	2	99.2	43
388	7.1	37.2	0.4	6.2	2	99.2	43
389	7.6	37.7	0.4	6.6	2	99.2	43
390	7.1	38.1	0.3	6.2	2	99.2	43
391	7.4	36.8	0.3	6.4	2	99.2	42
392	5.9	34.9	0.5	5.1	2	99.2	42
393	6.2	34.6	0.4	5.4	2	99.2	42
394	7.5	34.2	0.3	6.5	2	99.2	42
395	7.0	34.0	0.4	6.1	2	99.2	42
396	7.4	35.8	0.4	6.4	2	99.2	42
397	8.2	36.2	0.4	7.1	2	99.2	42
398	6.7	35.4	0.3	5.8	2	99.2	42
399	9.0	36.3	0.3	7.8	2	99.2	42
400	9.4	36.7	0.3	8.2	2	99.2	42
401	9.2	34.7	0.3	8.0	2	99.2	42
402	9.4	38.6	0.3	8.2	2	99.2	42
403	8.4	38.8	0.4	7.3	2	99.2	43
404	8.5	37.6	0.6	7.4	2	99.2	43
405	9.6	35.9	0.7	8.3	2	99.2	43
406	7.9	35.8	0.2	6.9	2	99.2	43
407	8.2	40.9	0.0	7.1	2	99.2	43
408	8.0	35.2	0.1	7.0	2	99.2	42
409	6.7	36.3	0.4	5.8	2	99.2	42
410	5.8	34.8	0.5	5.0	2	99.2	42
411	6.1	34.9	0.4	5.3	2	99.2	42
412	6.5	37.2	0.1	5.7	2	99.2	42
413	5.5	37.6	0.0	4.8	2	99.2	42
414	5.3	38.7	0.2	4.6	2	99.2	43
415	5.0	35.2	0.3	4.4	2	99.2	45

***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	6.1	34.4	0.4	5.3	2	99.2	45
417	7.8	35.7	0.4	6.8	2	99.2	45
418	8.0	32.7	0.3	6.9	2	99.2	45
419	8.5	34.9	0.2	7.4	2	99.2	45
420	8.7	31.8	0.2	7.6	2	99.2	44
421	8.5	32.6	0.0	7.4	3	99.2	43
422	10.0	35.7	0.0	8.7	3	99.2	43
423	10.2	39.1	0.1	8.8	3	99.2	43
424	9.1	36.8	0.4	7.9	3	99.2	43
425	7.8	36.9	0.5	6.8	3	99.2	43
426	8.6	35.3	0.5	7.5	3	99.2	43
427	7.5	33.4	0.3	6.5	3	99.2	43
428	7.5	33.5	0.4	6.6	3	99.2	43
429	5.8	38.1	0.4	5.1	3	99.2	43
430	6.9	35.1	0.4	6.0	3	99.2	43
431	7.2	35.4	0.3	6.3	3	99.2	43
432	6.9	35.4	0.3	6.0	3	99.2	42
433	6.9	34.7	0.4	6.0	3	99.2	42
434	5.7	35.2	0.3	4.9	3	99.2	42
435	5.5	32.9	0.2	4.7	3	99.2	42
436	6.1	32.7	0.3	5.3	3	99.2	42
437	8.2	32.3	0.3	7.2	3	99.2	42
438	8.3	32.1	0.2	7.2	3	99.2	42
439	7.3	32.1	0.3	6.3	3	99.2	42
440	7.6	33.4	0.4	6.6	3	99.2	42
441	8.1	33.9	0.4	7.0	3	99.2	42
442	9.2	35.8	0.4	8.0	3	99.2	42
443	8.4	35.1	0.3	7.3	3	99.2	42
444	7.6	34.6	0.4	6.6	3	99.2	42
445	7.7	32.6	0.6	6.7	3	99.2	43
446	8.6	34.3	0.4	7.4	3	99.2	43
447	8.4	34.5	0.3	7.3	3	99.2	43
448	7.7	35.0	0.3	6.7	3	99.2	43
449	7.3	36.4	0.4	6.3	3	99.2	43
450	6.4	36.2	0.4	5.6	3	99.2	43
451	6.7	32.5	0.3	5.8	3	99.2	43
452	7.6	34.0	0.4	6.6	3	99.2	43
453	7.7	35.2	0.4	6.7	3	99.2	43
454	6.7	33.6	0.4	5.8	3	99.2	43
455	7.3	33.6	0.3	6.3	3	99.2	43
456	9.5	34.2	0.4	8.2	3	99.2	43
457	8.5	35.8	0.4	7.4	3	99.2	44
458	7.3	35.1	0.5	6.4	3	99.2	44
459	7.1	34.7	0.5	6.2	3	99.2	44
460	8.5	33.8	0.5	7.4	3	99.2	44
461	9.2	34.0	0.5	8.0	3	99.2	44
462	8.9	34.3	0.5	7.7	3	99.2	43
463	9.0	37.4	0.5	7.8	3	99.2	42
464	8.7	36.6	0.5	7.6	3	99.2	42
465	8.4	35.4	0.4	7.3	3	99.2	42
466	8.6	34.8	0.4	7.5	3	99.2	42
467	7.2	38.1	0.4	6.3	3	99.2	42
468	6.6	35.6	0.5	5.7	3	99.2	42
469	6.6	36.2	0.4	5.8	2	99.2	41
470	6.6	35.5	0.3	5.8	2	99.2	41
471	6.8	35.2	0.4	5.9	2	99.2	41
472	5.8	36.6	0.5	5.0	2	99.2	41
473	6.1	38.1	0.4	5.3	2	99.2	41
474	6.3	35.1	0.3	5.4	2	99.2	42
475	6.1	32.8	0.3	5.3	2	99.2	45
476	4.7	31.6	0.3	4.0	2	99.2	45
477	4.2	31.1	0.2	3.6	2	99.2	45
478	6.6	31.6	0.3	5.7	2	99.2	45
479	7.9	31.7	0.3	6.8	2	99.2	45
480	7.5	31.8	0.4	6.5	3	99.2	44
481	6.1	32.2	0.4	5.3	3	99.2	42
482	5.4	33.0	0.5	4.7	3	99.2	42
483	4.7	32.0	0.5	4.1	3	99.2	42
484	4.4	35.9	0.4	3.8	3	99.2	42
485	5.3	36.7	0.6	4.6	3	99.2	42
486	5.9	35.7	0.7	5.2	3	99.2	44
487	5.8	35.5	0.6	5.0	3	99.2	46
488	6.5	35.3	0.4	5.6	3	99.2	46
489	6.5	34.5	0.3	5.7	3	99.2	46
490	8.0	34.9	0.3	6.9	3	99.2	46
491	7.3	33.1	0.3	6.3	3	99.2	46
492	6.4	32.3	0.3	5.6	3	99.2	45
493	6.0	31.3	0.3	5.2	3	99.2	44
494	7.2	31.8	0.3	6.2	3	99.2	44
495	6.1	32.3	0.3	5.3	3	99.2	44
496	6.2	33.4	0.3	5.4	3	99.2	44
497	7.4	33.7	0.3	6.4	3	99.2	44
498	8.4	36.0	0.3	7.3	3	99.2	43

Table E.02 Measurement data - Background

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/12/2017

***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	8.9	31.5	0.3	7.8	3	99.2	42
500	9.4	33.5	0.3	8.2	3	99.2	42
501	9.2	35.9	0.3	8.0	3	99.2	42
502	9.0	35.3	0.3	7.9	3	99.2	42
503	9.2	36.2	0.3	8.0	3	99.2	42
504	7.7	35.6	0.4	6.7	3	99.2	43
505	7.1	34.7	0.3	6.2	3	99.2	43
506	7.4	36.9	0.0	6.4	3	99.2	43
507	7.6	37.7	0.0	6.6	3	99.2	43
508	6.5	36.7	0.0	5.6	3	99.2	43
509	6.5	35.5	0.0	5.6	3	99.2	43
510	7.0	37.3	0.5	6.1	3	99.2	44
511	7.6	36.0	0.6	6.6	3	99.2	45
512	8.9	34.4	0.5	7.8	3	99.2	45
513	9.7	33.7	0.4	8.4	3	99.2	45
514	9.3	32.6	0.4	8.1	3	99.2	45
515	8.5	33.8	0.5	7.4	3	99.2	45
516	7.9	32.9	0.4	6.8	3	99.2	44
517	8.3	32.5	0.4	7.2	3	99.2	44
518	7.6	33.0	0.2	6.6	3	99.2	44
519	7.1	34.0	0.0	6.2	3	99.2	44
520	6.2	35.5	0.0	5.4	3	99.2	44
521	6.2	37.6	0.0	5.4	3	99.2	44
522	6.7	37.2	0.3	5.8	3	99.2	43
523	5.2	36.1	0.3	4.5	3	99.2	43
524	5.0	34.8	0.3	4.3	3	99.2	43
525	7.1	33.8	0.4	6.2	3	99.2	43
526	6.6	32.4	0.4	5.7	3	99.2	43
527	6.2	32.4	0.4	5.4	3	99.2	43
528	5.8	32.4	0.5	5.0	3	99.2	44
529	4.4	32.5	0.5	3.8	3	99.2	46
530	7.7	34.8	0.5	6.7	3	99.2	46
531	7.4	35.7	0.4	6.4	3	99.2	46
532	5.1	33.8	0.4	4.4	3	99.2	46
533	4.9	33.2	0.4	4.2	3	99.2	46
534	6.1	32.6	0.5	5.3	3	99.2	46
535	6.6	31.7	0.4	5.7	3	99.2	47
536	6.7	32.3	0.3	5.8	3	99.2	47
537	6.8	32.5	0.3	5.9	3	99.2	47
538	7.0	33.6	0.3	6.1	3	99.2	47
539	8.3	32.9	0.3	7.2	3	99.2	47
540	8.4	34.8	0.3	7.3	3	99.2	46
541	7.7	33.6	0.3	6.7	3	99.2	44
542	8.2	35.0	0.4	7.1	3	99.2	44
543	8.9	35.6	0.4	7.7	3	99.2	44
544	8.1	35.0	0.4	7.0	3	99.2	44
545	8.2	37.6	0.4	7.1	3	99.2	44
546	8.3	37.3	0.4	7.2	3	99.2	44
547	5.9	35.7	0.4	5.1	3	99.2	44
548	6.5	35.1	0.4	5.7	3	99.2	44
549	6.8	33.5	0.3	5.9	3	99.2	44
550	5.2	34.5	0.4	4.5	3	99.2	44
551			0.5	3.4	3	99.2	44
552			0.5	4.1	3	99.2	45
553			0.5	5.4	3	99.2	47
554			0.5	6.2	3	99.2	47
555			0.4	5.3	3	99.2	47
556			0.3	5.0	3	99.2	47
557			0.5	5.3	3	99.2	47
558			0.5	7.6	3	99.2	47
559			0.5	7.8	3	99.2	46
560			0.5	6.9	3	99.2	46
561			0.4	6.3	3	99.2	46
562			0.3	6.6	3	99.2	46
563			0.4	6.8	3	98.7	83
564			0.5	8.8	3	98.7	83
565			0.5	8.7	3	98.7	83
566			0.6	7.3	3	98.7	83
567			0.5	7.5	3	98.7	83
568			0.5	10.2	3	98.7	83
569			0.5	9.2	3	98.7	83
570			0.6	11.0	3	98.7	83
571			0.5	10.8	3	98.7	83
572			0.6	9.6	3	98.7	83
573			0.6	9.1	3	98.7	83
574			0.6	8.8	3	98.7	81
575			0.5	7.9	3	98.7	81
576			0.5	7.9	3	98.7	81
577			0.6	7.5	3	98.7	81
578			0.6	6.9	3	98.7	81
579			0.6	6.7	3	98.7	81
580			0.5	8.2	3	98.7	82
581			0.5	7.7	3	98.7	82

***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			0.5	7.5	3	98.7	82
583			0.4	7.1	3	98.7	82
584			0.4	6.8	3	98.7	82
585			0.4	7.0	3	98.7	82
586			0.5	6.9	3	98.7	82
587			0.7	7.9	3	98.7	81
588			0.6	7.7	3	98.7	81
589			0.5	7.0	3	98.7	81
590			0.4	7.1	3	98.7	81
591			0.3	6.4	3	98.7	81
592			0.3	6.9	3	98.7	83
593			0.5	8.1	3	98.7	84
594			0.5	7.4	3	98.7	84
595			0.4	8.1	3	98.7	84
596			0.5	7.8	3	98.7	84
597			0.5	8.5	3	98.7	84
598			0.5	7.6	3	98.7	82
599			0.5	6.2	3	98.7	81
600			0.4	6.4	3	98.7	81
601			0.3	6.5	3	98.7	81
602			0.3	6.7	3	98.7	81
603			0.5	6.5	3	98.7	81
604			0.5	8.8	3	98.7	82
605			0.6	9.3	3	98.7	83
606			0.5	10.0	3	98.7	83
607			0.5	9.8	3	98.7	83
608			0.5	9.9	3	98.7	83
609			0.5	8.6	3	98.7	83
610			0.5	8.9	3	98.7	82
611			0.5	9.3	3	98.7	81
612			0.6	10.3	3	98.7	81
613			0.4	10.0	3	98.7	81
614			0.4	9.5	3	98.7	81
615			0.3	9.8	3	98.7	81
616			0.3	9.3	3	98.7	80
617			0.4	9.2	3	98.7	80
618			0.3	8.7	3	98.7	80
619			0.4	7.8	3	98.7	80
620			0.5	8.6	3	98.7	80
621			0.5	9.3	3	98.7	80
622			0.5	8.4	3	98.7	80
623			0.5	9.2	3	98.7	80
624			0.6	8.8	3	98.7	80
625			0.6	6.8	3	98.7	80
626			0.6	7.4	3	98.7	80
627			0.5	7.9	3	98.7	80
628			0.5	7.3	3	98.7	81
629			0.5	7.9	3	98.7	81
630			0.4	7.7	3	98.7	81
631			0.5	7.9	3	98.7	81
632			0.6	8.4	3	98.7	81
633			0.6	9.8	3	98.7	81
634			0.5	9.3	3	98.7	81
635			0.5	8.4	3	98.7	81
636			0.4	7.8	3	98.7	81
637			0.4	7.3	3	98.7	81
638			0.5	7.6	3	98.7	81
639			0.5	7.3	3	98.7	81
640			0.4	7.4	3	98.7	80
641			0.4	7.0	3	98.7	79
642			0.4	6.4	3	98.7	79
643			0.4	7.0	3	98.7	79
644			0.4	7.8	3	98.7	79
645			0.5	7.3	3	98.7	79
646			0.5	7.7	3	98.7	81
647			0.6	7.0	3	98.7	81
648			0.5	6.3	3	98.7	81
649			0.4	6.2	3	98.7	81
650			0.3	9.0	3	98.7	81
651			0.3	8.8	3	98.7	81
652			0.4	7.9	3	98.7	81
653			0.4	7.7	3	98.7	81
654			0.4	7.6	3	98.7	81
655			0.3	7.4	3	98.7	81
656			0.3	7.9	3	98.7	81
657			0.4	7.3	3	98.7	81
658			0.4	6.6	3	98.7	81
659			0.3	8.0	3	98.7	81
660			0.3	8.5	3	98.7	81
661			0.3	7.3	3	98.7	81
662			0.3	6.5	3	98.7	81
663			0.4	5.4	3	98.7	81
664			0.4	6.6	3	98.7	81

***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 (%)
665			0.3	8.4	3	98.7	81
666			0.3	7.6	3	98.7	81
667			0.3	7.3	3	98.7	81
668			0.3	8.5	3	98.7	81
669			0.3	10.1	3	98.7	81
670			0.3	9.2	4	98.7	79
671			0.5	8.4	4	98.7	78
672			0.5	8.7	4	98.7	78
673			0.5	8.7	4	98.7	78
674			0.4	7.2	4	98.7	78
675			0.6	6.4	4	98.7	78
676			0.5	6.8	4	98.7	80
677			0.5	6.6	4	98.7	82
678			0.4	7.1	4	98.7	82
679			0.5	6.7	4	98.7	82
680			0.5	7.0	4	98.7	82
681			0.4	8.5	4	98.7	82
682			0.4	7.3	4	98.7	80
683			0.4	7.6	4	98.7	79
684			0.5	6.5	4	98.7	79
685			0.4	7.1	4	98.7	79
686			0.3	8.8	4	98.7	79
687			0.4	8.6	4	98.7	79
688			0.5	9.5	4	98.7	79
689			0.4	7.9	4	98.7	79
690			0.5	9.0	4	98.7	79
691			0.4	8.6	4	98.7	79
692			0.3	8.6	4	98.7	79
693			0.3	8.3	4	98.7	79
694			0.3	8.4	4	98.7	78
695			0.4	8.2	4	98.7	78
696			0.7	8.8	4	98.7	78
697			0.7	9.6	4	98.7	78
698			0.5	9.2	4	98.7	78
699			0.5	8.6	4	98.7	78
700			0.5	8.0	4	98.7	78
701			0.6	7.2	4	98.7	78
702			0.7	7.0	4	98.7	78
703			0.4	7.1	4	98.7	78
704			0.4	7.1	4	98.7	78
705			0.5	6.6	4	98.7	78
706			0.4	6.1	4	98.7	80
707			0.4	6.4	4	98.8	81
708			0.4	6.1	4	98.8	81
709			0.4	7.4	4	98.8	81
710			0.5	9.0	4	98.8	81
711			0.6	7.6	4	98.8	81
712			0.7	7.1	4	98.8	80
713			0.5	7.3	4	98.8	80
714			0.5	8.7	4	98.8	80
715			0.4	8.9	4	98.8	80
716			0.5	8.6	4	98.8	80
717			0.5	8.3	4	98.8	80
718			0.4	8.6	4	98.7	80
719			0.4	7.2	4	98.7	79
720			0.5	6.9	4	98.7	79
721			0.5	7.6	4	98.7	79
722			0.6	8.1	4	98.7	79
723			0.4	6.6	4	98.7	79
724			0.6	6.8	4	98.7	80
725			0.6	7.0	4	98.8	80
726			0.4	5.8	4	98.8	80
727			0.3	7.0	4	98.8	80
728			0.3	7.3	4	98.8	80
729			0.3	7.5	4	98.8	80
730			0.2	8.0	4	98.8	81
731			0.3	7.4	4	98.8	81
732			0.3	7.3	4	98.8	81
733			0.4	6.3	4	98.8	81
734			0.5	5.9	4	98.8	81
735	8.1	39.8	0.5	7.0	4	98.8	81
736	7.1	39.0	0.4	6.1	4	98.8	81
737	7.8	37.3	0.4	6.7	4	98.8	81
738	9.4	36.5	0.5	8.2	4	98.8	81
739	8.7	38.3	0.5	7.5	4	98.8	81
740	8.4	37.6	0.5	7.3	4	98.8	81
741	11.9	36.3	0.6	10.4	4	98.8	81
742	12.8	38.5	0.6	11.1	4	98.8	80
743	11.4	44.6	0.5	9.9	4	98.8	80
744	10.9	42.3	0.6	9.4	4	98.8	80
745	10.6	43.4	0.6	9.2	4	98.8	80
746	10.6	46.0	0.6	9.2	4	98.8	80
747	9.4	47.2	0.6	8.1	4	98.8	80

Table E.02 Measurement data - Background

Project: Jericho Wind Farm - Turbine T80 - IEC 61400-11 Measurement

Report ID: 14462.00.T80.RP5

Created on: 10/12/2017

***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 (%)
748	9.2	46.5	0.5	8.0	4	98.8	80
749	12.3	47.5	0.5	10.7	4	98.8	80
750	11.7	44.2	0.5	10.1	4	98.8	80
751	10.2	44.4	0.6	8.9	4	98.8	80
752	11.0	42.2	0.6	9.6	4	98.8	80
753	10.2	38.8	0.4	8.9	4	98.8	80
754	10.7	37.9	0.5	9.3	4	98.8	79
755	13.0	38.1	0.5	11.3	4	98.8	79
756	12.1	39.6	0.5	10.5	4	98.8	79
757	10.5	41.2	0.5	9.2	4	98.8	79
758	10.0	42.1	0.5	8.7	4	98.8	79
759	9.6	43.8	0.5	8.3	4	98.8	79
760	10.5	44.0	0.5	9.1	4	98.8	79
761	9.2	41.0	0.5	8.0	4	98.8	79
762	8.4	39.4	0.7	7.3	4	98.8	79
763	9.4	40.4	0.5	8.2	4	98.8	79
764	8.9	39.1	0.5	7.7	4	98.8	79
765	10.4	37.5	0.5	9.0	4	98.8	79
766	11.4	39.1	0.2	9.9	4	98.8	80
767	11.7	40.0	0.4	10.2	4	98.8	80
768	11.7	42.0	0.6	10.2	4	98.8	80
769	10.3	43.0	0.6	8.9	4	98.8	80
770	9.0	44.0	0.7	7.8	4	98.8	80
771	10.1	43.8	0.5	8.8	4	98.8	80
772	10.0	43.2	0.5	8.7	4	98.8	80
773	11.1	44.2	0.5	9.6	4	98.8	80
774	12.4	40.2	0.5	10.7	4	98.8	80
775	10.4	42.8	0.6	9.0	4	98.8	80
776	9.8	43.9	0.7	8.5	4	98.8	80
777	10.9	42.9	0.7	9.5	4	98.8	80
778	10.7	45.5	0.4	9.3	4	98.8	79
779	10.6	42.3	0.3	9.2	4	98.8	79
780	12.2	42.7	0.5	10.6	4	98.8	79
781	12.9	41.6	0.5	11.2	4	98.8	79
782	11.8	41.7	0.7	10.2	4	98.8	79
783	11.7	42.6	0.6	10.2	4	98.8	79
784	11.7	46.0	0.7	10.2	4	98.8	79
785	11.1	45.9	0.7	9.6	4	98.8	78
786	10.3	46.9	0.5	8.9	4	98.8	78
787	11.3	44.3	0.4	9.8	4	98.8	78
788	10.5	42.7	0.5	9.2	4	98.8	78
789	9.5	44.6	0.5	8.3	4	98.8	78
790	9.0	43.2	0.4	7.8	4	98.8	80
791	8.3	41.8	0.4	7.2	4	98.8	81
792	7.1	41.4	0.3	6.1	4	98.8	81
793	6.9	41.8	0.4	6.0	4	98.8	81
794	6.9	44.5	0.5	6.0	4	98.8	81
795	6.3	42.1	0.5	5.5	4	98.8	81
796	9.5	41.3	0.5	8.3	4	98.8	82
797	10.9	37.1	0.3	9.4	4	98.8	83
798	10.9	39.0	0.4	9.5	4	98.8	83
799	10.7	37.6	0.4	9.3	4	98.8	83
800	10.0	38.5	0.4	8.7	4	98.8	83
801	8.9	38.0	0.4	7.8	4	98.8	83
802	8.5	37.6	0.5	7.3	4	98.8	81
803	9.0	41.7	0.5	7.8	4	98.8	80
804	11.5	41.2	0.6	10.0	4	98.8	80
805	11.6	39.9	0.5	10.1	4	98.8	80
806	10.9	44.0	0.4	9.5	4	98.8	80
807	8.6	42.8	0.5	7.5	4	98.8	80
808	9.5	41.0	0.4	8.3	4	98.8	80
809	10.7	39.9	0.0	9.3	4	98.8	80
810	10.0	38.7	0.0	8.7	4	98.8	80
811	9.9	40.0	0.0	8.6	4	98.8	80
812	8.5	39.1	0.0	7.4	4	98.8	80
813	8.3	41.0	0.0	7.2	4	98.8	80
814	8.1	39.9	0.0	7.0	4	98.8	81
815	8.3	41.8	0.0	7.2	4	98.8	82
816	8.8	40.5	0.0	7.7	4	98.8	82
817	9.2	39.8	0.0	8.0	4	98.8	82
818	8.2	41.3	0.0	7.2	4	98.8	82
819	8.4	42.9	0.0	7.3	4	98.8	82
820	8.4	40.5	0.0	7.3	4	98.8	83
821	9.5	43.8	0.0	8.2	4	98.8	83
822	10.9	41.8	0.0	9.4	4	98.8	83
823	11.3	40.2	0.0	9.9	4	98.8	83
824	10.2	40.3	0.0	8.9	4	98.8	83
825	10.1	38.2	0.0	8.8	4	98.8	83
826	10.2	42.7	0.0	8.9	4	98.8	82
827	9.6	43.5	0.0	8.4	4	98.8	81
828	9.7	43.2	0.0	8.4	4	98.8	81
829	9.6	41.9	0.0	8.3	4	98.8	81
830	7.4	42.0	0.0	6.4	4	98.8	81

***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 (%)
831	7.5	41.8	0.0	6.5	4	98.8	81
832	9.5	40.3	0.0	8.3	4	98.8	82
833	8.7	39.7	0.0	7.5	4	98.8	82
834	11.1	38.6	0.0	9.7	4	98.8	82
835	9.9	40.4	0.0	8.6	4	98.8	82
836	9.7	39.7	0.0	8.4	4	98.8	82
837	10.3	39.2	0.0	8.9	4	98.8	82
838	9.7	36.7	0.0	8.5	4	98.8	82
839	8.7	36.8	0.0	7.6	4	98.8	82
840	9.2	35.6	0.0	8.0	4	98.8	82
841	7.7	36.1	0.0	6.7	4	98.8	82
842	8.5	34.8	0.0	7.4	4	98.8	82
843	10.1	35.6	0.0	8.7	4	98.8	82
844	10.3	37.7	0.0	9.0	4	98.8	81
845	9.5	39.0	0.0	8.2	4	98.8	81
846	10.8	36.5	0.0	9.4	4	98.8	81
847	11.5	36.1	0.0	10.0	4	98.8	81
848	9.6	35.7	0.0	8.3	4	98.8	81
849	9.6	39.8	0.0	8.3	4	98.8	81
850	8.5	38.5	0.0	7.4	4	98.8	82
851	8.1	38.7	0.0	7.0	4	98.8	82
852	7.1	42.8	0.0	6.2	4	98.8	82
853	7.5	39.5	0.0	6.5	4	98.8	82
854	8.4	36.6	0.0	7.3	4	98.8	82
855	8.9	35.3	0.0	7.7	4	98.8	82
856	10.6	35.9	0.0	9.2	4	98.8	82
857	10.3	38.6	0.0	8.9	4	98.8	82
858	10.4	41.8	0.0	9.0	4	98.8	82
859	10.8	40.4	0.0	9.4	4	98.8	82
860	11.6	40.0	0.0	10.1	4	98.8	82
861	10.4	40.3	0.0	9.0	4	98.8	82
862	9.7	39.9	0.0	8.4	4	98.8	81
863	9.3	40.6	0.0	8.1	4	98.8	80
864	10.7	40.2	0.0	9.3	4	98.8	80
865	8.9	40.5	0.0	7.7	4	98.8	80
866	8.5	44.0	0.0	7.4	4	98.8	80
867	9.6	45.8	0.0	8.3	4	98.8	80
868	11.3	44.0	0.0	9.8	4	98.8	81
869	9.3	43.2	0.0	8.1	4	98.8	82
870	8.3	39.8	0.0	7.2	4	98.8	82
871	9.7	40.2	0.0	8.4	4	98.8	82
872	10.4	42.1	0.0	9.0	4	98.8	82
873	10.6	41.5	0.0	9.2	4	98.8	82
874	10.4	42.1	0.0	9.1	4	98.8	81
875	9.8	41.7	0.0	8.5	4	98.8	81
876	9.1	39.8	0.0	7.9	4	98.8	81
877	9.6	39.5	0.0	8.3	4	98.8	81
878	8.6	42.6	0.0	7.5	4	98.8	81
879	10.6	45.4	0.0	9.2	4	98.8	81
880	10.4	45.4	0.0	9.0	4	98.8	81
881	9.2	47.0	0.0	8.0	4	98.8	81
882	8.4	46.7	0.0	7.3	4	98.8	81
883	9.5	46.0	0.0	8.2	4	98.8	81
884	9.3	45.8	0.0	8.1	4	98.8	81
885	9.1	44.5	0.0	7.9	4	98.8	81
886	8.5	40.9	0.0	7.4	4	98.8	81
887	9.1	39.6	0.0	7.9	4	98.8	81
888	9.8	38.3	0.0	8.5	4	98.8	81
889	9.0	37.4	0.0	7.8	4	98.8	81
890	8.3	39.4	0.0	7.2	4	98.8	81
891	9.5	39.1	0.0	8.2	4	98.8	81
892	9.3	38.9	0.0	8.0	4	98.8	81
893	7.6	36.8	0.0	6.6	4	98.8	81
894	9.4	37.8	0.0	8.2	4	98.8	81
895	8.7	39.6	0.0	7.6	4	98.8	81
896	8.2	39.9	0.0	7.1	4	98.8	81
897	9.2	43.8	0.0	8.0	4	98.8	81
898	8.8	42.5	0.0	7.6	4	98.8	82
899	9.6	44.0	0.0	8.3	4	98.8	82
900	11.2	43.7	0.0	9.8	4	98.8	82
901	10.1	43.8	0.0	8.7	4	98.8	82
902	8.8	42.3	0.0	7.7	4	98.8	82
903	8.9	44.4	0.0	7.7	4	98.8	82
904	10.0	42.3	0.0	8.6	4	98.8	82
905	9.9	42.2	0.0	8.6	4	98.8	81
906	8.7	41.1	0.0	7.6	4	98.8	81
907	9.5	40.0	0.0	8.3	4	98.8	81
908	9.6	40.7	0.0	8.4	4	98.8	81
909	8.7	40.7	0.0	7.6	4	98.8	81
910	9.8	40.6	0.0	8.5	4	98.8	81
911	12.7	40.6	0.0	11.1	4	98.8	82
912	12.1	43.3	0.0	10.5	4	98.8	82
913	11.8	40.6	0.0	10.2	4	98.8	82

***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 (%)
914	11.3	38.6	0.3	9.9	4	98.8	82
915	10.8	39.9	0.7	9.4	4	98.8	82
916	9.5	42.8	0.6	8.3	4	98.8	80
917	10.1	43.4	0.5	8.8	4	98.8	79
918	11.2	45.1	0.4	9.7	4	98.8	79
919	10.5	43.5	0.5	9.1	4	98.8	79
920	10.2	38.7	0.6	8.9	4	98.8	79
921	9.2	39.5	0.5	8.0	4	98.8	79
922	8.6	44.2	0.7	7.5	4	98.8	80
923	10.3	42.9	0.7	8.9	4	98.8	80
924	9.5	40.3	0.6	8.2	4	98.8	80
925	10.1	39.7	0.4	8.8	4	98.8	80
926	9.4	39.6	0.4	8.2	4	98.8	80
927	8.2	38.0	0.3	7.1	4	98.8	80
928	8.6	42.6	0.3	7.5	4	98.8	81
929	7.9	41.9	0.2	6.8	4	98.8	82
930	8.0	40.4	0.2	7.0	4	98.8	82
931	7.7	41.3	0.3	6.7	4	98.8	82
932	6.2	36.8	0.4	5.4	4	98.8	82
933	8.0	35.7	0.4	7.0	4	98.8	82
934	11.3	39.2	0.3	9.8	4	98.8	83
935	10.3	39.3	0.4	9.0	4	98.8	84
936	9.6	39.8	0.4	8.4	4	98.8	84
937	9.1	38.3	0.5	7.9	4	98.8	84
938	8.5	43.0	0.4	7.4	4	98.8	84
939	8.4	40.5	0.4	7.3	4	98.8	84
940	8.8	41.6	0.4	7.6	4	98.8	82
941	8.5	39.5	0.4	7.4	4	98.8	81
942	7.8	39.1	0.4	6.8	4	98.8	81
943	8.9	38.3	0.5	7.8	4	98.8	81
944	8.8	40.0	0.5	7.7	4	98.8	81
945	9.2	45.6	0.5	8.0	4	98.8	81
946	9.7	40.1	0.5	8.4	4	98.8	82
947	11.5	42.2	0.5	10.0	4	98.8	83
948	10.7	44.2	0.5	9.3	4	98.8	83
949	10.2	42.5	0.5	8.8	4	98.8	83
950	9.4	42.4	0.6	8.2	4	98.8	83
951	10.4	42.0	0.5	9.1	4	98.8	83
952	10.7	40.8	0.4	9.3	4	98.8	81
953	9.8	42.6	0.4	8.5	4	98.8	80
954	10.9	41.5	0.4	9.4	4	98.8	80
955	10.9	39.9	0.4	9.4	4	98.8	80
956	10.3	42.3	0.4	8.9	4	98.8	80
957	9.6	40.0	0.4	8.3	4	98.8	80
958	10.7	40.8	0.4	9.3	4	98.8	79
959	10.9	38.0	0.3	9.5	4	98.8	78
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Appendi xF
Note on anemometer position with IEC 61400-11 Ed 2.1 and Ed 3.0

Note N6.040.17

Note on anemometer position with IEC 61400-11 editions 2.1 and 3.0

Author: Bo Søndergaard

Project number: 35.6539.01
Date: 7/11/2017
Project manager: Bo Søndergaard
Controlled by: -

To : Aercoustics Engineering Limited
Att.: Payam Ashtiani

From : Bo Søndergaard

1. Purpose

In the capacity of convenor for Maintenance Team 11, the workgroup in charge of IEC 61400-11, since 2006, I have been asked to provide background information, and comment on the consequences of changing the anemometer position when going from edition 2.1 to edition 3, and the recommended method for using measurements based on edition 2.1 for an analysis with edition 3.

2. Comment

There are several differences between IEC 61400-11 standard edition 2.1 (November 2006) and edition 3.0 (November 2012). In particular, the general data treatment procedures for noise levels, and the tonality assessment were changed to keep up with the changes in wind turbine design at the time.

However, since edition 1.0 (1998), very few changes have been made to the IEC 61400-11 standard with respect to the measurement setup. In edition 1.0 the prescribed position of the anemometer was upwind (2 to 4 rotor diameters) as it was allowed to use the anemometer for determination of the standardized wind speed with the wind turbine running. At that time the distances were smaller and this setup is maintained in Annex F on small wind turbines in edition 3. Editions 2.0 and 2.1, still allowed such use of the anemometer

In Germany, modified versions of IEC 61400-11 edition 2 were introduced by the FGW. In revision 15 (from 2004), using the power for determination of the standardized wind speed was mandatory. In revision 16 (from 2005), it was stated that the position of the anemometer can deviate from the requirements in IEC 61400-11 edition 2, without specifying position requirements. Germany has had a strong influence on the development of the IEC 61400-11 standard through the experience from several measuring companies and German authorities. The decision to allow alternative positions for the anemometer is very representative of the situation. It is difficult to set up general requirements for the position of the anemometer that works at all sites. As such, it makes sense to allow for an expert

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judgement on the anemometer position in a given situation. In the Danish regulations, it is stated that the anemometer has to be close to the wind turbine in a position where neither the wind turbine nor objects in the terrain is expected to influence the wind speed measurements.

The German and Danish considerations on the position of the anemometer is based on the fact that the dominating background noise at the microphone position can be more or less dependent on wind speed; and can be generated by vegetation upwind, downwind or to the side of the wind turbine. This is often reflected in background noise with a weak dependence on wind speed.

Maintenance Team 11, responsible for revising IEC 61400-11, discussed this issue and there was a strong support from the measurement institutes for using the nacelle anemometer for background noise measurements. In most cases, this would give a reasonable correlation between wind speed and background noise. The nacelle anemometer is not influenced by terrain and represents, to a reasonable degree, the wind in the surroundings. However, the manufacturers argued that the nacelle anemometer might not be a part of future designs and could not be guaranteed. There was a general agreement that it was difficult to decide on an optimum position, but in most cases, downwind and to the side would make sense, resulting in Figure 5 of edition 3.0. The position of the anemometer is not considered an important issue and the wording is “guidance” and “acceptable” and not a stronger wording like “shall”. This is a deliberate decision by the Maintenance Team 11 to ensure flexibility when other choices make more sense.

The recommended method when using measurements made according to IEC 61400-11 edition 2.1 for analysis with IEC 61400-11 edition 3.0 is to use the nacelle anemometer for the background noise. This will work well in most cases. Alternatively, to use the measured wind speed at 10 m height if there is no strong influence from the background noise (e.g. when signal to noise ratio is better than 6 dB).

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Appendix G
Information for Regulator

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E-Audit Checklist

(2017 Compliance Protocol AF5): E-Audit checklist

Wind Energy Project – Screening Document – Acoustic Audit Report – Emmission IEC61400-11 Standard

Information Required in the Acoustic Audit Report – Immission

Item #	Description	Complete?	Comment
1	Characterization of the wind turbine Items 1 to 26; IEC61400-11:2013, Section 10.2	✓	
2	Physical environment Items 27 to 33; IEC61400-11:2013, Section 10.3, Physical Environment	✓	
3	Measurement instrumentation Items 34 to 39; IEC61400-11:2013, Section 10.4, Instrumentation	✓	
4	Acoustic data Items 40 to 52; IEC61400-11:2013, Section 10.5, Acoustic Data	✓	
5	Non-acoustic data Items 50 to 53, and 56; IEC61400-11:2003 Section 10.6, Non-Acoustic Data Items 59 and 60; NPC-233, Section 12.3, Acoustic Audit – Acoustical Data, bullet point number 8, All necessary and supporting calculations	✓	
6	Uncertainty the apparent sound power level at integer wind speeds one-third octave band spectrum of the noise at the reference position at each integer wind speed the Tonality of the sound emissions of the wind turbine measured at the reference position	✓	
7	Additional information Item 60; NPC-233, Section 10, Report Format, bullet point number 4, Conclusions and Recommendations Item 61; NPC-233, Section 12.3, Acoustic Audit – Acoustical Data, bullet point number 8, All necessary and supporting calculations Item 62; NPC-233, Section 12.3, Acoustic Audit – Acoustical Data, bullet point number 3, Details of measurement procedure	✓	All data Excel sheet provided
8	Items 68 to 72; IEC61400-11:2013, Section 10.5, Acoustic Data	⊘	Items 68 to 72 acoustic data as per IEC 61400-11 standard are optional; low frequency noise, infrasound, impulsivity, amplitude modulation not reported
9	Non-acoustic data Items 73 to 74 are from IEC61400-11:2013, Section 10.6, Non-Acoustic Data	⊘	Items 73 to 74 non-acoustic data as per IEC 64100-11 standard are optional; turbulence intensity during acoustic meeasurements not reported

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Sample Calculation

Allowed Range from Power Curve and Required Wind Speeds

Sample Calculation: Allowed range of power curve and required wind speeds

Power Curve & Required Wind Speeds		
Power Curve Tolerance	1%	
Acceptable range min	3	m/s
Acceptable range max	9	m/s
Min allowable range	3	m/s
Max allowable range	9	m/s
Power Output	1620	kW
85% Power	1377	kW
Corresponding wind speed	8.61	m/s
Minimum bin	7.0	m/s
Maximum bin	11.0	m/s

Power Curve Hub Wind Speed (m/s)	Power [kW]	+ value = acceptable slope of power curve
0	**0**	-32.4
1	0	-32.4
2	0	-28.4
3	4	60.6
4	97	150.6
5	280	214.6
6	527	277.6
7	837	347.6
8	1217	228.6
9	1478	86.6
10	1597	-9.4
11	1620	-32.4
12	1620	-32.4
13	1620	-32.4
14	1620	-32.4
15	1620	-32.4
16	1620	-32.4
17	1620	-32.4
18	1620	-32.4
19	1620	-32.4
20	1620	-32.4
21	1620	-32.4
22	1620	-32.4
23	1620	-32.4
24	1620	-32.4
25	1620	

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Sample Calculation

K_{nac} and K_z

[as per IEC 61400-11 Edition 3.0 Section 8.2.1.2 and Section 8.2.2]

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2
Sample calculations have been based on measurement data collected and reported for Jericho Wind Farm (Report ID: 14662.00.T80.R5)

For all data points with power levels from the allowed range of the power curve, the average value of the ratio of the wind speed derived from the power curve $V_{P,n}$ and the measured nacelle wind speed $V_{nac,m}$, k_{nac}, is derived as per equation (1). Information to calculate k_{nac} is provided in Table 1.

$$k_{nac} = \frac{1}{n}\left(\sum_{i=1}^{n}\left(\frac{v_{p,n}}{v_{nac,m}}\right)_i\right) \quad (1)$$

where

$V_{nac,m}$ is measured nacelle wind speed

K_{nac} is nacelle k-factor

$V_{P,n}$ is wind speed derived from the power curve

k_{nac} = 1.0160

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Table 1 - Information to calculate K_{nac}

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed in acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hub} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{hub}/V_{nac,m}$
1	0	1026	7.53	1	7.53	7.08	1.06
2	0	848	7.03	1	7.03	6.46	1.09
3	0	705	6.58	1	6.58	4.89	1.35
4	0	574	6.15	1	6.15	5.40	1.14
5	0	508	5.93	1	5.93	5.88	1.01
6	0	519	5.97	1	5.97	5.58	1.07
7	0	602	6.24	1	6.24	5.94	1.05
8	0	804	6.90	1	6.90	6.56	1.05
9	0	1008	7.45	1	7.45	7.30	1.02
10	0	1080	7.64	1	7.64	7.14	1.07
11	0	973	7.36	1	7.36	6.53	1.13
12	0	925	7.24	1	7.24	6.95	1.04
13	0	992	7.41	1	7.41	6.90	1.07
14	0	1091	7.67	1	7.67	7.48	1.03
15	0	1026	7.50	1	7.50	6.80	1.10
16	0	950	7.30	1	7.30	6.79	1.07
17	0	1057	7.58	1	7.58	7.85	0.97
18	0	1112	7.73	1	7.73	7.99	0.97
19	0	1100	7.69	1	7.69	7.71	1.00
20	0	1187	7.92	1	7.92	7.19	1.10
21	0	1205	7.97	1	7.97	6.96	1.15
22	0	1046	7.55	1	7.55	6.74	1.12
23	0	912	7.20	1	7.20	6.30	1.14
24	0	772	6.80	1	6.80	5.83	1.17
25	0	605	6.25	1	6.25	6.08	1.03
26	0	579	6.17	1	6.17	6.81	0.91
27	0	731	6.66	1	6.66	7.35	0.91
28	0	820	6.95	1	6.95	6.45	1.08
29	0	801	6.89	1	6.89	6.27	1.10
30	0	728	6.65	1	6.65	6.20	1.07
31	0	786	6.84	1	6.84	6.98	0.98
32	0	986	7.40	1	7.40	8.15	0.91
33	0	1129	7.77	1	7.77	7.53	1.03
34	0	1178	7.90	1	7.90	7.59	1.04
35	0	1078	7.64	1	7.64	7.29	1.05
36	0	998	7.43	1	7.43	7.13	1.04
37	0	974	7.37	1	7.37	7.11	1.04
38	0	991	7.41	1	7.41	7.67	0.97
39	0	1013	7.47	1	7.47	7.12	1.05
40	0	1012	7.47	1	7.47	7.28	1.03
41	0	998	7.43	1	7.43	7.70	0.97
42	0	958	7.32	1	7.32	6.60	1.11
43	0	919	7.22	1	7.22	6.71	1.08
44	0	896	7.16	1	7.16	6.97	1.03
45	0	851	7.04	1	7.04	6.91	1.02
46	1	770	6.79	1		6.05	
47	1	700	6.56	1		5.88	
48	1	657	6.42	1		5.98	
49	0	657	6.42	1	6.42	5.90	1.09
50	0	646	6.39	1	6.39	5.43	1.18
51	0	588	6.20	1	6.20	5.67	1.09
52	0	633	6.35	1	6.35	6.07	1.04
53	1	679	6.50	1		6.18	
54	1	654	6.41	1		6.56	
55	1	655	6.42	1		6.37	
56	1	679	6.50	1		6.97	
57	1	680	6.50	1		6.90	
58	1	626	6.32	1		6.33	
59	1	609	6.27	1		5.88	
60	1	655	6.42	1		6.55	
61	1	691	6.53	1		6.25	
62	0	704	6.57	1	6.57	5.99	1.10
63	0	798	6.88	1	6.88	6.56	1.05
64	0	964	7.34	1	7.34	8.00	0.92
65	0	1098	7.69	1	7.69	7.79	0.99
66	0	1062	7.59	1	7.59	7.66	0.99
67	0	974	7.36	1	7.36	6.77	1.09
68	0	1005	7.45	1	7.45	7.83	0.95
69	0	1034	7.52	1	7.52	7.19	1.05
70	0	952	7.31	1	7.31	6.62	1.10
71	0	850	7.04	1	7.04	6.66	1.06
72	0	726	6.65	1	6.65	6.76	0.98
73	0	602	6.25	1	6.25	5.83	1.07
74	0	568	6.14	1	6.14	6.10	1.01
75	0	578	6.17	1	6.17	5.95	1.04
76	0	558	6.10	1	6.10	5.95	1.03
77	0	577	6.17	1	6.17	6.02	1.02
78	0	622	6.31	1	6.31	6.67	0.95
79	0	694	6.54	1	6.54	6.23	1.05
80	0	787	6.85	1	6.85	6.57	1.04
81	0	761	6.76	1	6.76	6.83	0.99
82	0	705	6.58	1	6.58	6.60	1.00
83	0	777	6.81	1	6.81	6.48	1.05
84	0	788	6.85	1	6.85	5.98	1.15
85	0	766	6.78	1	6.78	5.91	1.15
86	0	769	6.78	1	6.78	6.66	1.02
87	0	753	6.73	1	6.73	6.55	1.03
88	0	727	6.65	1	6.65	6.13	1.08
89	0	701	6.57	1	6.57	6.56	1.00
90	0	701	6.57	1	6.57	6.44	1.02
91	0	723	6.64	1	6.64	6.40	1.04
92	0	772	6.80	1	6.80	6.23	1.09
93	0	906	7.19	1	7.19	6.81	1.06
94	0	926	7.24	1	7.24	7.49	0.97
95	0	848	7.03	1	7.03	5.91	1.19
96	0	975	7.37	1	7.37	6.77	1.09
97	0	1627		0	11.18	11.01	
98	0	1608	10.48	0	10.68	10.51	
99	0	1542	9.54	0	9.59	9.44	
100	0	1626		0		9.08	
101	0	1610	10.56	0		8.16	
102	0	1603	10.24	0	9.85	9.69	
103	0	1416	8.76	1	8.76	7.65	1.15
104	0	1203	7.97	1	7.97	7.18	1.11
105	0	1159	7.85	1	7.85	7.70	1.02
106	0	1321	8.40	1	8.40	7.91	1.06
107	0	1256	8.15	1	8.15	7.07	1.15
108	0	1071	7.62	1	7.62	7.08	1.08
109	0	931	7.25	1	7.25	7.47	0.97
110	0	789	6.85	1	6.85	6.58	1.04
111	0	647	6.39	1	6.39	5.83	1.10
112	0	544	6.06	1	6.06	5.30	1.14
113	0	520	5.97	1	5.97	5.44	1.10
114	0	543	6.06	1	6.06	5.96	1.02
115	0	519	5.97	1	5.97	6.56	0.91
116	0	408	5.52	1	5.52	5.64	0.98
117	0	295	5.06	1	5.06	5.48	0.92
118	0	258	4.88	1	4.88	5.46	0.89
119	0	315	5.14	1	5.14	5.39	0.95
120	0	324	5.18	1	5.18	5.51	0.94
121	0	400	5.49	1	5.49	5.38	1.02
122	0	405	5.51	1	5.51	5.50	1.00
123	0	402	5.50	1	5.50	5.53	0.99
124	0	447	5.68	1	5.68	5.64	1.01
125	0	692	6.54	1	6.54	8.12	0.81
126	0	1138	7.79	1	7.79	7.63	1.02
127	0	1266	8.19	1	8.19	8.03	1.02
128	0	1139	7.80	1	7.80	7.32	1.07
129	0	1126	7.76	1	7.76	7.46	1.04
130	0	1178	7.90	1	7.90	8.51	0.93
131	0	1047	7.56	1	7.56	7.07	1.07
132	0	815	6.93	1	6.93	6.79	1.02
133	0	726	6.65	1	6.65	7.31	0.91
134	0	838	7.01	1	7.01	7.86	0.89
135	0	1040	7.54	1	7.54	7.51	1.00
136	0	1289	8.28	1	8.28	7.51	1.10
137	0	1210	7.99	1	7.99	7.81	1.02
138	0	1170	7.88	1	7.88	7.72	1.02
139	0	1243	8.10	1	8.10	7.57	1.07
140	0	1224	8.03	1	8.03	7.69	1.04
141	0	1113	7.73	1	7.73	6.99	1.11
142	0	925	7.24	1	7.24	6.48	1.12
143	0	784	6.84	1	6.84	7.05	0.97
144	0	678	6.49	1	6.49	6.43	1.01
145	0	646	6.39	1	6.39	6.11	1.04
146	0	717	6.62	1	6.62	7.29	0.91
147	0	769	6.78	1	6.78	6.45	1.05
148	0	677	6.49	1	6.49	6.61	0.98
149	0	511	5.94	1	5.94	5.40	1.10
150	0	395	5.47	1	5.47	6.18	0.89
151	0	405	5.51	1	5.51	5.86	0.94
152	0	396	5.47	1	5.47	5.59	0.98
153	0	222	4.68	1	4.68	5.15	0.91
154	0	329	5.20	1	5.20	5.39	0.96
155	0	476	5.80	1	5.80	6.48	0.89
156	0	801	6.89	1	6.89	7.68	0.90
157	0	1332	8.44	1	8.44	8.79	0.96
158	0	1362	8.56	1	8.56	8.04	1.06
159	0	1152	7.83	1	7.83	7.24	1.08
160	0	1026	7.50	1	7.50	6.86	1.09
161	0	981	7.38	1	7.38	6.95	1.06
162	0	977	7.37	1	7.37	7.30	1.01
163	0	957	7.32	1	7.32	7.12	1.03
164	0	1013	7.47	1	7.47	7.18	1.04
165	0	1050	7.56	1	7.56	6.74	1.12
166	0	992	7.41	1	7.41	7.20	1.03
167	0	897	7.16	1	7.16	7.02	1.02
168	0	848	7.03	1	7.03	6.12	1.15
169	0	813	6.93	1	6.93	6.45	1.07
170	0	805	6.90	1	6.90	6.94	0.99
171	0	738	6.69	1	6.69	6.06	1.10
172	0	655	6.42	1	6.42	6.42	1.00
173	0	623	6.31	1	6.31	5.68	1.11
174	0	694	6.54	1	6.54	7.54	0.87
175	0	771	6.79	1	6.79	7.39	0.92
176	0	693	6.54	1	6.54	6.46	1.01
177	0	772	6.80	1	6.80	7.08	0.96
178	0	1142	7.80	1	7.80	9.05	0.86
179	0	1333	8.45	1	8.45	7.34	1.15
180	0	1110	7.72	1	7.72	6.24	1.24
181	0	894	7.16	1	7.16	6.59	1.09
182	0	798	6.88	1	6.88	7.00	0.98
183	0	713	6.61	1	6.61	7.06	0.94
184	0	649	6.40	1	6.40	5.83	1.10
185	0	666	6.45	1	6.45	6.84	0.94
186	0	741	6.69	1	6.69	7.37	0.91
187	0	733	6.67	1	6.67	5.85	1.14
188	0	667	6.46	1	6.46	5.81	1.11
189	0	664	6.45	1	6.45	5.76	1.12
190	0	704	6.58	1	6.58	6.45	1.02
191	0	740	6.69	1	6.69	7.39	0.91
192	0	726	6.65	1	6.65	6.36	1.05
193	0	774	6.80	1	6.80	6.98	0.97
194	0	894	7.15	1	7.15	7.37	0.97
195	0	893	7.15	1	7.15	5.96	1.20
196	0	827	6.97	1	6.97	6.83	1.02
197	0	806	6.91	1	6.91	6.50	1.06
198	0	776	6.81	1	6.81	6.27	1.09
199	0	729	6.66	1	6.66	6.05	1.10
200	0	792	6.86	1	6.86	7.37	0.93
201	0	882	7.12	1	7.12	7.00	1.02
202	0	874	7.10	1	7.10	7.18	0.99
203	0	811	6.92	1	6.92	6.63	1.04
204	0	704	6.58	1	6.58	6.35	1.04
205	0	679	6.49	1	6.49	5.99	1.08
206	0	779	6.82	1	6.82	5.42	1.26
207	0	949	7.30	1	7.30	6.43	1.14
208	0	983	7.39	1	7.39	6.61	1.12
209	0	964	7.34	1	7.34	6.65	1.10
210	0	949	7.30	1	7.30	6.85	1.07
211	0	924	7.23	1	7.23	6.83	1.06
212	0	922	7.23	1	7.23	6.51	1.11
213	0	969	7.35	1	7.35	7.12	1.03
214	0	946	7.29	1	7.29	6.47	1.13
215	0	838	7.01	1	7.01	6.93	1.01
216	0	699	6.56	1	6.56	6.55	1.00
217	0	594	6.22	1	6.22	6.68	0.93
218	0	579	6.17	1	6.17	5.67	1.09
219	0	571	6.14	1	6.14	6.58	0.93
220	0	584	6.19	1	6.19	6.99	0.89
221	0	641	6.37	1	6.37	6.48	0.98
222	0	661	6.44	1	6.44	6.42	1.00
223	0	628	6.33	1	6.33	6.20	1.02
224	0	541	6.05	1	6.05	5.34	1.13
225	0	456	5.72	1	5.72	5.87	0.97
226	0	450	5.69	1	5.69	6.38	0.89
227	0	499	5.89	1	5.89	6.14	0.96
228	0	607	6.26	1	6.26	6.53	0.96
229	0	696	6.55	1	6.55	6.61	0.99
230	0	735	6.68	1	6.68	6.44	1.04
231	0	856	7.05	1	7.05	7.47	0.94
232	0	981	7.38	1	7.38	7.23	1.02
233	0	965	7.34	1	7.34	7.35	1.00
234	0	802	6.89	1	6.89	6.85	1.01
235	0	602	6.25	1	6.25	6.31	0.99
236	0	502	5.90	1	5.90	6.43	0.92
237	0	484	5.83	1	5.83	5.50	1.06
238	0	383	5.42	1	5.42	5.17	1.05
239	0	276	4.98	1	4.98	5.41	0.92
240	0	420	5.57	1	5.57	6.56	0.85
241	0	519	5.97	1	5.97	6.19	0.96
242	0	650	6.40	1	6.40	6.55	0.98
243	0	714	6.61	1	6.61	7.09	0.93
244	0	744	6.70	1	6.70	7.37	0.91
245	0	718	6.62	1	6.62	5.77	1.15
246	0	642	6.38	1	6.38	5.87	1.09
247	0	554	6.09	1	6.09	6.12	1.00
248	0	477	5.80	1	5.80	5.99	0.97
249	0	358	5.32	1	5.32	5.89	0.90
250	0	238	4.77	1	4.77	4.96	0.96
251	0	191	4.51	1	4.51	4.93	0.92
252	0	187	4.49	1	4.49	4.41	1.02
253	0	217	4.65	1	4.65	4.33	1.07
254	0	284	5.02	1	5.02	5.81	0.86
255	0	261	4.89	1	4.89	5.60	0.87
256	0	257	4.87	1	4.87	4.89	1.00
257	0	339	5.24	1	5.24	5.55	0.95
258	0	372	5.37	1	5.37	5.69	0.94
259	0	291	5.04	1	5.04	5.85	0.86
260	0	377	5.39	1	5.39	5.70	0.95
261	0	413	5.54	1	5.54	5.51	1.00
262	0	539	6.04	1	6.04	7.04	0.86
263	0	760	6.76	1	6.76	7.41	0.91
264	0	937	7.27	1	7.27	7.34	0.99

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ijn} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ijn}/V_{nac,m}$
265	0	999	7.43	1	7.43	7.81	0.95
266	0	1020	7.48	1	7.48	8.09	0.93
267	0	976	7.37	1	7.37	7.23	1.02
268	0	1009	7.46	1	7.46	6.15	1.21
269	0	1043	7.55	1	7.55	6.94	1.09
270	0	997	7.42	1	7.42	7.34	1.01
271	0	957	7.32	1	7.32	6.95	1.05
272	0	873	7.10	1	7.10	6.91	1.03
273	0	738	6.69	1	6.69	6.44	1.04
274	0	779	6.82	1	6.82	6.13	1.11
275	0	858	7.06	1	7.06	6.16	1.15
276	0	777	6.81	1	6.81	7.18	0.95
277	0	717	6.62	1	6.62	6.87	0.96
278	0	659	6.43	1	6.43	5.40	1.19
279	0	568	6.14	1	6.14	5.44	1.13
280	0	497	5.88	1	5.88	5.04	1.17
281	0	463	5.74	1	5.74	6.44	0.89
282	0	506	5.92	1	5.92	6.30	0.94
283	0	707	6.59	1	6.59	7.51	0.88
284	0	916	7.21	1	7.21	7.51	0.96
285	0	970	7.36	1	7.36	7.25	1.01
286	0	891	7.15	1	7.15	6.82	1.05
287	0	742	6.70	1	6.70	6.18	1.08
288	0	626	6.32	1	6.32	5.74	1.10
289	0	647	6.39	1	6.39	6.55	0.98
290	0	849	7.04	1	7.04	7.79	0.90
291	0	1149	7.82	1	7.82	7.86	1.00
292	0	1099	7.69	1	7.69	7.02	1.10
293	0	902	7.18	1	7.18	7.53	0.95
294	0	714	6.61	1	6.61	6.39	1.03
295	0	587	6.20	1	6.20	5.87	1.05
296	0	604	6.25	1	6.25	6.53	0.96
297	0	675	6.48	1	6.48	6.27	1.03
298	0	648	6.39	1	6.39	6.25	1.02
299	0	537	6.04	1	6.04	4.90	1.23
300	0	411	5.53	1	5.53	5.24	1.06
301	0	377	5.39	1	5.39	5.98	0.90
302	0	359	5.32	1	5.32	5.77	0.92
303	0	300	5.08	1	5.08	5.41	0.94
304	0	270	4.95	1	4.95	5.13	0.96
305	0	335	5.22	1	5.22	4.99	1.05
306	0	389	5.44	1	5.44	6.24	0.87
307	0	456	5.72	1	5.72	5.74	1.00
308	0	763	6.77	1	6.77	7.05	0.96
309	0	1340	8.47	1	8.47	7.95	1.07
310	0	1644		0		8.98	
311	0	1629		0		8.90	
312	0	1625		0		7.68	
313	0	1633		0		7.05	
314	0	1646		0	9.56	9.41	
315	0	1607	10.46	0		7.77	
316	0	1602	10.23	0		8.14	
317	0	1580	9.86	0		8.06	
318	0	1377	8.61	1	8.61	7.32	1.18
319	0	1270	8.21	1	8.21	7.25	1.13
320	0	1282	8.25	1	8.25	8.55	0.97
321	0	1277	8.23	1	8.23	7.46	1.10
322	0	1187	7.92	1	7.92	8.31	0.95
323	0	1135	7.79	1	7.79	7.74	1.01
324	0	1007	7.45	1	7.45	6.49	1.15
325	0	841	7.01	1	7.01	6.57	1.07
326	0	747	6.72	1	6.72	6.64	1.01
327	0	822	6.96	1	6.96	7.40	0.94
328	0	975	7.37	1	7.37	7.26	1.02
329	0	1118	7.74	1	7.74	6.99	1.11
330	0	1166	7.87	1	7.87	7.21	1.09
331	0	1108	7.72	1	7.72	6.75	1.14
332	0	1083	7.65	1	7.65	7.45	1.03
333	0	1038	7.53	1	7.53	7.95	0.95
334	0	952	7.31	1	7.31	7.21	1.01
335	0	845	7.03	1	7.03	6.79	1.03
336	0	768	6.78	1	6.78	6.26	1.08
337	0	752	6.73	1	6.73	6.76	1.00
338	0	797	6.88	1	6.88	6.86	1.00
339	0	847	7.03	1	7.03	6.65	1.06
340	0	896	7.16	1	7.16	7.14	1.00
341	0	1108	7.72	1	7.72	8.31	0.93
342	0	1244	8.11	1	8.11	7.44	1.09
343	1	1277	8.23	1		7.44	
344	1	1009	7.46	1		7.69	
345	1	459	5.73	1		5.67	
346	1	201	4.57	1		6.60	
347	1	100	4.02	1		7.11	
348	1	100	4.02	1		6.34	
349	1	100	4.02	1		6.09	
350	1	100	4.02	1		6.67	
351	1	100	4.02	1		6.81	
352	1	100	4.02	1		7.79	

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ijn} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ijn}/V_{nac,m}$
353	1	100	4.02	1		6.32	
354	1	100	4.02	1		6.63	
355	1	100	4.02	1		6.98	
356	1	100	4.02	1		6.08	
357	1	100	4.02	1		6.30	
358	1	100	4.02	1		6.33	
359	1	100	4.02	1		7.30	
360	1	100	4.02	1		6.65	
361	1	100	4.02	1		6.79	
362	1	100	4.02	1		6.54	
363	1	100	4.02	1		6.26	
364	1	100	4.02	1		6.77	
365	1	100	4.02	1		6.41	
366	1	100	4.02	1		6.55	
367	1	100	4.02	1		7.10	
368	1	100	4.02	1		6.63	
369	1	100	4.02	1		7.26	
370	1	102	4.03	1		6.80	
371	1	361	5.33	1		8.43	
372	1	648	6.39	1		7.12	
373	1	614	6.29	1		6.63	
374	1	803	6.90	1		7.41	
375	1	906	7.19	1		8.93	
376	0	894	7.15	1	7.15	8.08	0.89
377	0	927	7.24	1	7.24	7.58	0.95
378	0	801	6.89	1	6.89	6.86	1.00
379	0	673	6.48	1	6.48	6.08	1.06
380	0	603	6.25	1	6.25	5.66	1.10
381	0	559	6.11	1	6.11	5.86	1.04
382	0	577	6.16	1	6.16	6.52	0.95
383	0	833	6.99	1	6.99	8.87	0.79
384	0	1150	7.83	1	7.83	8.03	0.97
385	0	1246	8.11	1	8.11	7.41	1.10
386	0	1321	8.40	1	8.40	8.09	1.04
387	0	1352	8.52	1	8.52	8.84	0.96
388	0	1232	8.06	1	8.06	7.17	1.13
389	0	1186	7.92	1	7.92	8.65	0.92
390	0	1102	7.70	1	7.70	7.62	1.01
391	0	827	6.97	1	6.97	5.68	1.23
392	0	608	6.27	1	6.27	6.85	0.91
393	0	565	6.13	1	6.13	6.82	0.90
394	0	607	6.26	1	6.26	6.53	0.96
395	0	653	6.41	1	6.41	6.13	1.04
396	0	704	6.58	1	6.58	6.47	1.02
397	0	640	6.37	1	6.37	5.53	1.15
398	0	642	6.38	1	6.38	6.68	0.96
399	0	818	6.95	1	6.95	6.60	1.05
400	0	908	7.19	1	7.19	7.56	0.95
401	0	856	7.06	1	7.06	6.60	1.07
402	0	775	6.81	1	6.81	6.26	1.09
403	0	689	6.53	1	6.53	6.39	1.02
404	0	584	6.19	1	6.19	5.76	1.07
405	0	538	6.04	1	6.04	6.04	1.00
406	0	652	6.41	1	6.41	7.13	0.90
407	0	882	7.12	1	7.12	7.08	1.01
408	0	982	7.39	1	7.39	7.08	1.04
409	0	1026	7.50	1	7.50	8.51	0.88
410	0	1067	7.61	1	7.61	7.09	1.07
411	0	1270	8.21	1	8.21	7.56	1.08
412	0	1280	8.24	1	8.24	7.39	1.12
413	0	1165	7.87	1	7.87	7.76	1.01
414	0	1165	7.87	1	7.87	7.33	1.07
415	0	1065	7.60	1	7.60	6.49	1.17
416	0	948	7.30	1	7.30	6.65	1.10
417	0	850	7.04	1	7.04	6.92	1.02
418	0	740	6.69	1	6.69	5.89	1.14
419	0	676	6.48	1	6.48	6.07	1.07
420	0	626	6.32	1	6.32	5.64	1.12
421	0	614	6.28	1	6.28	6.22	1.01
422	0	620	6.30	1	6.30	5.34	1.18
423	0	566	6.13	1	6.13	5.94	1.03
424	0	526	6.00	1	6.00	6.32	0.95
425	0	506	5.92	1	5.92	5.53	1.07
426	0	455	5.71	1	5.71	5.72	1.00
427	0	414	5.55	1	5.55	5.59	0.99
428	0	426	5.59	1	5.59	5.60	1.00
429	0	460	5.73	1	5.73	5.74	1.00
430	0	583	6.18	1	6.18	6.57	0.94
431	0	693	6.54	1	6.54	6.73	0.97
432	0	671	6.47	1	6.47	5.99	1.08
433	0	721	6.63	1	6.63	6.81	0.97
434	0	798	6.88	1	6.88	6.44	1.07
435	0	800	6.89	1	6.89	6.73	1.02
436	0	748	6.72	1	6.72	5.98	1.12
437	0	713	6.61	1	6.61	5.90	1.12
438	0	777	6.81	1	6.81	7.19	0.95
439	0	821	6.95	1	6.95	7.24	0.96
440	0	759	6.75	1	6.75	6.04	1.12

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ijn} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ijn}/V_{nac,m}$
441	0	709	6.59	1	6.59	5.88	1.12
442	0	690	6.53	1	6.53	6.17	1.06
443	0	650	6.40	1	6.40	5.54	1.15
444	0	648	6.39	1	6.39	6.64	0.96
445	0	676	6.49	1	6.49	6.92	0.94
446	0	659	6.43	1	6.43	5.96	1.08
447	0	597	6.23	1	6.23	5.06	1.23
448	0	629	6.33	1	6.33	6.36	1.00
449	0	685	6.52	1	6.52	5.82	1.12
450	0	706	6.58	1	6.58	6.54	1.01
451	0	684	6.51	1	6.51	5.96	1.09
452	0	611	6.27	1	6.27	6.69	0.94
453	0	619	6.30	1	6.30	5.41	1.16
454	0	650	6.40	1	6.40	6.92	0.93
455	0	590	6.21	1	6.21	6.73	0.92
456	0	508	5.93	1	5.93	6.80	0.87
457	0	472	5.78	1	5.78	6.18	0.94
458	0	578	6.17	1	6.17	7.10	0.87
459	0	599	6.24	1	6.24	6.13	1.02
460	0	683	6.51	1	6.51	6.13	1.06
461	0	893	7.15	1	7.15	7.96	0.90
462	0	1158	7.85	1	7.85	8.71	0.90
463	0	1146	7.82	1	7.82	8.67	0.90
464	0	1145	7.81	1	7.81	8.32	0.94
465	0	1411	8.74	1	8.74	7.96	1.10
466	0	1555	9.65	0	9.38	9.23	
467	0	1558	9.68	0		8.61	
468	0	1412	8.75	1	8.75	7.32	1.19
469	0	1296	8.31	1	8.31	7.68	1.08
470	0	1272	8.21	1	8.21	8.26	0.99
471	0	1342	8.48	1	8.48	8.35	1.02
472	0	1432	8.83	1	8.83	7.50	1.18
473	0	1295	8.30	1	8.30	7.19	1.15
474	0	1159	7.85	1	7.85	7.42	1.06
475	0	1090	7.67	1	7.67	7.13	1.08
476	0	1171	7.88	1	7.88	7.40	1.07
477	0	1119	7.74	1	7.74	7.10	1.09
478	0	933	7.26	1	7.26	6.75	1.08
479	0	751	6.73	1	6.73	6.59	1.02
480	0	587	6.20	1	6.20	5.82	1.07
481	0	446	5.68	1	5.68	5.73	0.99
482	0	318	5.15	1	5.15	5.49	0.94
483	0	401	5.49	1	5.49	5.01	1.10
484	0	422	5.58	1	5.58	5.69	0.98
485	0	434	5.63	1	5.63	5.72	0.98
486	0	526	6.00	1	6.00	6.46	0.93
487	0	746	6.71	1	6.71	7.50	0.90
488	0	899	7.17	1	7.17	6.77	1.06
489	0	925	7.24	1	7.24	6.59	1.10
490	0	991	7.41	1	7.41	7.60	0.97
491	0	1177	7.90	1	7.90	7.33	1.08
492	0	1277	8.23	1	8.23	8.51	0.97
493	0	1151	7.83	1	7.83	7.26	1.08
494	0	978	7.37	1	7.37	6.76	1.09
495	0	897	7.16	1	7.16	7.43	0.96
496	0	919	7.22	1	7.22	7.70	0.94
497	0	985	7.39	1	7.39	7.79	0.95
498	0	1059	7.59	1	7.59	7.79	0.97
499	0	1098	7.69	1	7.69	8.51	0.90
500	0	976	7.37	1	7.37	6.87	1.07
501	0	794	6.87	1	6.87	5.68	1.21
502	0	689	6.53	1	6.53	6.24	1.05
503	0	633	6.35	1	6.35	5.54	1.15
504	0	622	6.31	1	6.31	5.53	1.14
505	0	773	6.80	1	6.80	6.86	0.99
506	0	1176	7.90	1	7.90	8.05	0.98
507	0	1534	9.47	0	9.97	9.82	
508	0	1245	8.11	1	8.11	7.76	1.05
509	0	1076	7.63	1	7.63	7.37	1.04
510	0	1014	7.47	1	7.47	7.39	1.01
511	0	902	7.17	1	7.17	6.18	1.16
512	0	772	6.80	1	6.80	6.79	1.00
513	0	618	6.30	1	6.30	6.31	1.00
514	0	405	5.51	1	5.51	5.53	1.00
515	0	287	5.03	1	5.03	5.37	0.94
516	0	291	5.04	1	5.04	5.30	0.95
517	0	337	5.23	1	5.23	5.77	0.91
518	0	389	5.44	1	5.44	5.43	1.00
519	0	423	5.58	1	5.58	5.77	0.97
520	0	735	6.68	1	6.68	8.22	0.81
521	0	1082	7.65	1	7.65	8.72	0.88
522	0	1183	7.91	1	7.91	8.07	0.98
523	0	1122	7.75	1	7.75	8.19	0.95
524	0	1084	7.65	1	7.65	7.52	1.02
525	0	1019	7.48	1	7.48	7.01	1.07
526	0	884	7.13	1	7.13	6.77	1.05
527	0	787	6.84	1	6.84	5.69	1.20
528	0	744	6.71	1	6.71	6.81	0.98

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ch} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ch}/V_{nac,m}$
529	0	721	6.63	1	6.63	6.45	1.03
530	0	678	6.49	1	6.49	6.65	0.98
531	0	632	6.34	1	6.34	6.79	0.93
532	0	722	6.64	1	6.64	7.77	0.85
533	0	1006	7.45	1	7.45	8.22	0.91
534	0	1340	8.47	1	8.47	9.54	0.89
535	0	1406	8.73	1	8.73	8.10	1.08
536	0	1251	8.13	1	8.13	7.21	1.13
537	0	1364	8.56	1	8.56	8.60	1.00
538	0	1375	8.61	1	8.61	7.83	1.10
539	0	1238	8.08	1	8.08	8.18	0.99
540	0	1172	7.89	1	7.89	7.52	1.05
541	0	1171	7.88	1	7.88	7.93	0.99
542	0	1043	7.55	1	7.55	7.68	0.98
543	0	857	7.06	1	7.06	6.59	1.07
544	0	718	6.62	1	6.62	5.74	1.15
545	0	625	6.32	1	6.32	5.87	1.08
546	0	520	5.97	1	5.97	5.45	1.10
547	0	409	5.53	1	5.53	5.24	1.05
548	0	394	5.46	1	5.46	5.88	0.93
549	0	430	5.61	1	5.61	6.66	0.84
550	0	474	5.79	1	5.79	5.55	1.04
551	0	490	5.85	1	5.85	5.59	1.05
552	0	553	6.09	1	6.09	7.13	0.85
553	0	731	6.66	1	6.66	9.06	0.74
554	0	768	6.78	1	6.78	7.43	0.91
555	0	665	6.45	1	6.45	6.34	1.02
556	0	831	6.99	1	6.99	7.38	0.95
557	0	1092	7.67	1	7.67	7.52	1.02
558	0	1081	7.65	1	7.65	6.92	1.10
559	0	981	7.38	1	7.38	7.26	1.02
560	0	802	6.89	1	6.89	6.32	1.09
561	0	622	6.31	1	6.31	6.29	1.00
562	0	515	5.96	1	5.96	5.90	1.01
563	0	468	5.76	1	5.76	6.42	0.90
564	0	474	5.79	1	5.79	6.09	0.95
565	0	426	5.59	1	5.59	6.06	0.92
566	0	237	4.76	1	4.76	4.92	0.97
567	0	252	4.85	1	4.85	5.14	0.94
568	0	398	5.48	1	5.48	5.44	1.01
569	0	547	6.07	1	6.07	6.71	0.90
570	0	734	6.67	1	6.67	6.83	0.98
571	0	816	6.94	1	6.94	6.25	1.11
572	0	802	6.89	1	6.89	6.21	1.11
573	0	730	6.66	1	6.66	5.85	1.14
574	0	736	6.68	1	6.68	6.08	1.10
575	0	739	6.69	1	6.69	6.06	1.10
576	0	647	6.39	1	6.39	6.06	1.05
577	0	553	6.09	1	6.09	5.46	1.11
578	0	513	5.95	1	5.95	5.86	1.01
579	0	560	6.11	1	6.11	5.99	1.02
580	0	633	6.35	1	6.35	6.52	0.97
581	0	767	6.78	1	6.78	7.14	0.95
582	0	889	7.14	1	7.14	7.20	0.99
583	0	914	7.21	1	7.21	6.63	1.09
584	0	869	7.09	1	7.09	6.51	1.09
585	0	753	6.73	1	6.73	5.69	1.18
586	0	622	6.31	1	6.31	6.43	0.98
587	0	550	6.08	1	6.08	6.00	1.01
588	0	515	5.96	1	5.96	5.92	1.01
589	0	514	5.95	1	5.95	5.55	1.07
590	0	533	6.02	1	6.02	5.77	1.04
591	0	611	6.28	1	6.28	6.22	1.01
592	0	694	6.54	1	6.54	6.93	0.94
593	0	657	6.43	1	6.43	6.12	1.05
594	0	552	6.09	1	6.09	5.90	1.03
595	0	476	5.80	1	5.80	5.95	0.97
596	0	452	5.70	1	5.70	6.00	0.95
597	0	468	5.77	1	5.77	6.23	0.93
598	0	514	5.95	1	5.95	6.63	0.90
599	0	551	6.08	1	6.08	6.18	0.98
600	0	658	6.43	1	6.43	7.40	0.87
601	0	783	6.83	1	6.83	7.32	0.93
602	0	784	6.83	1	6.83	7.39	0.92
603	0	726	6.65	1	6.65	6.60	1.01
604	0	737	6.68	1	6.68	6.21	1.08
605	0	778	6.82	1	6.82	6.49	1.05
606	0	707	6.59	1	6.59	5.98	1.10
607	0	651	6.40	1	6.40	6.63	0.97
608	0	736	6.68	1	6.68	7.17	0.93
609	0	887	7.14	1	7.14	8.32	0.86
610	0	938	7.27	1	7.27	7.60	0.96
611	0	929	7.25	1	7.25	7.86	0.92
612	0	906	7.19	1	7.19	7.53	0.96
613	0	863	7.07	1	7.07	6.66	1.06
614	0	863	7.07	1	7.07	7.48	0.95
615	0	927	7.24	1	7.24	7.98	0.91
616	0	898	7.17	1	7.17	6.73	1.07
617	0	760	6.76	1	6.76	6.41	1.05
618	0	641	6.37	1	6.37	6.27	1.02
619	0	615	6.29	1	6.29	6.69	0.94
620	0	676	6.49	1	6.49	7.32	0.89
621	1	777	6.81	1		7.65	
622	1	859	7.06	1		7.84	
623	1	927	7.24	1		8.23	
624	1	1052	7.57	1		8.82	
625	1	1125	7.76	1		8.07	
626	1	1016	7.47	1		6.46	
627	1	826	6.97	1		6.74	
628	1	661	6.44	1		6.62	
629	0	520	5.98	1	5.98	5.71	1.05
630	0	451	5.70	1	5.70	5.91	0.96
631	0	475	5.79	1	5.79	5.55	1.04
632	0	542	6.05	1	6.05	5.93	1.02
633	0	603	6.25	1	6.25	6.98	0.90
634	0	622	6.31	1	6.31	6.27	1.01
635	0	570	6.14	1	6.14	5.61	1.09
636	0	545	6.06	1	6.06	6.32	0.96
637	0	554	6.09	1	6.09	5.80	1.05
638	0	537	6.04	1	6.04	5.53	1.09
639	0	654	6.41	1	6.41	6.78	0.95
640	0	893	7.15	1	7.15	7.60	0.94
641	0	1011	7.46	1	7.46	6.74	1.11
642	0	1049	7.56	1	7.56	7.48	1.01
643	0	1036	7.53	1	7.53	6.88	1.09
644	0	940	7.28	1	7.28	6.61	1.10
645	0	818	6.95	1	6.95	6.70	1.04
646	0	730	6.66	1	6.66	5.99	1.11
647	0	691	6.53	1	6.53	5.98	1.09
648	0	728	6.65	1	6.65	6.89	0.97
649	0	742	6.70	1	6.70	6.42	1.04
650	0	711	6.60	1	6.60	6.27	1.05
651	0	711	6.60	1	6.60	7.01	0.94
652	0	652	6.41	1	6.41	6.18	1.04
653	0	587	6.20	1	6.20	5.63	1.10
654	0	606	6.26	1	6.26	6.63	0.94
655	0	547	6.07	1	6.07	5.78	1.05
656	0	497	5.88	1	5.88	6.17	0.95
657	0	600	6.24	1	6.24	6.22	1.00
658	0	630	6.34	1	6.34	6.44	0.98
659	0	536	6.03	1	6.03	6.05	1.00
660	0	457	5.72	1	5.72	5.46	1.05
661	0	511	5.94	1	5.94	5.18	1.15
662	0	649	6.40	1	6.40	6.16	1.04
663	0	700	6.56	1	6.56	6.45	1.02
664	0	714	6.61	1	6.61	6.45	1.02
665	0	691	6.53	1	6.53	6.33	1.03
666	0	622	6.31	1	6.31	5.80	1.09
667	0	539	6.04	1	6.04	5.29	1.14
668	0	496	5.88	1	5.88	6.05	0.97
669	0	567	6.13	1	6.13	6.42	0.95
670	0	649	6.40	1	6.40	6.79	0.94
671	0	653	6.41	1	6.41	6.63	0.97
672	0	619	6.30	1	6.30	6.29	1.00
673	0	546	6.07	1	6.07	6.10	0.99
674	0	435	5.63	1	5.63	5.46	1.03
675	0	380	5.40	1	5.40	6.24	0.87
676	0	403	5.50	1	5.50	5.97	0.92
677	0	475	5.79	1	5.79	6.94	0.83
678	0	588	6.20	1	6.20	7.57	0.82
679	0	712	6.60	1	6.60	7.15	0.92
680	0	713	6.60	1	6.60	6.47	1.02
681	0	604	6.25	1	6.25	6.24	1.00
682	0	512	5.94	1	5.94	6.28	0.95
683	0	445	5.67	1	5.67	5.45	1.04
684	0	333	5.21	1	5.21	5.37	0.97
685	0	309	5.12	1	5.12	5.54	0.92
686	0	336	5.23	1	5.23	5.61	0.93
687	0	361	5.33	1	5.33	4.76	1.12
688	0	369	5.36	1	5.36	5.60	0.96
689	0	407	5.52	1	5.52	5.63	0.98
690	0	481	5.82	1	5.82	6.35	0.92
691	0	527	6.00	1	6.00	5.19	1.16
692	0	487	5.84	1	5.84	5.70	1.03
693	0	443	5.66	1	5.66	5.31	1.07
694	0	400	5.49	1	5.49	5.41	1.01
695	0	322	5.17	1	5.17	4.66	1.11
696	0	233	4.74	1	4.74	5.01	0.95
697	0	212	4.63	1	4.63	4.91	0.94
698	0	202	4.57	1	4.57	5.09	0.90
699	0	300	5.08	1	5.08	5.73	0.89
700	0	275	4.97	1	4.97	5.81	0.86
701	0	169	4.40	1	4.40	4.61	0.95
702	0	193	4.52	1	4.52	4.62	0.98
703	0	343	5.26	1	5.26	4.79	1.10
704	0	402	5.50	1	5.50	5.88	0.94
705	0	451	5.69	1	5.69	5.94	0.96
706	1	426	5.59	1		5.13	
707	1	437	5.64	1		5.75	
708	1	496	5.88	1		6.73	
709	1	466	5.76	1		5.49	
710	1	382	5.41	1		5.45	
711	1	319	5.16	1		5.62	
712	1	273	4.96	1		4.82	
713	0	324	5.18	1	5.18	5.27	0.98
714	0	323	5.18	1	5.18	5.76	0.90
715	0	146	4.27	1	4.27	4.95	0.86
716	0	190	4.51	1	4.51	4.62	0.98
717	0	285	5.02	1	5.02	5.23	0.96
718	1	405	5.51	1		6.12	
719	1	505	5.92	1		7.96	
720	1	616	6.29	1		7.17	
721	1	747	6.72	1		7.52	
722	1	812	6.92	1		7.40	
723	1	761	6.76	1		6.53	
724	1	681	6.50	1		6.22	
725	1	628	6.33	1		6.23	
726	1	593	6.22	1		6.07	
727	1	572	6.15	1		5.68	
728	1	598	6.23	1		6.66	
729	1	677	6.49	1		7.33	
730	1	653	6.41	1		6.24	
731	0	573	6.15	1	6.15	6.02	1.02
732	0	560	6.11	1	6.11	6.36	0.96
733	0	539	6.04	1	6.04	5.32	1.14
734	0	447	5.68	1	5.68	4.98	1.14
735	0	354	5.30	1	5.30	5.11	1.04
736	0	397	5.48	1	5.48	5.60	0.98
737	0	503	5.91	1	5.91	6.25	0.95
738	0	656	6.42	1	6.42	6.77	0.95
739	0	672	6.47	1	6.47	6.58	0.98
740	0	584	6.19	1	6.19	5.74	1.08
741	0	455	5.71	1	5.71	4.93	1.16
742	0	386	5.43	1	5.43	4.68	1.16
743	0	403	5.50	1	5.50	6.18	0.89
744	0	428	5.60	1	5.60	5.56	1.01
745	0	483	5.82	1	5.82	6.75	0.86
746	0	544	6.06	1	6.06	6.26	0.97
747	0	575	6.16	1	6.16	5.76	1.07
748	0	639	6.36	1	6.36	6.12	1.04
749	0	663	6.44	1	6.44	6.37	1.01
750	0	569	6.14	1	6.14	5.52	1.11
751	0	428	5.60	1	5.60	4.91	1.14
752	0	315	5.14	1	5.14	5.36	0.96
753	0	304	5.10	1	5.10	5.27	0.97
754	0	312	5.13	1	5.13	5.72	0.90
755	0	215	4.64	1	4.64	5.07	0.92
756	0	116	4.10	1	4.10	4.35	0.94
757	0	102	4.03	1	4.03	4.07	0.99
758	0	100	4.02	1	4.02	3.73	1.08
759	0	100	4.02	1	4.02	3.55	1.13
760	0	100	4.02	1	4.02	3.37	1.19
761	0	100	4.02	1	4.02	3.90	1.03
762	0	100	4.02	1	4.02	3.66	1.10
763	0	103	4.03	1	4.03	4.05	1.00
764	0	272	4.96	1	4.96	4.43	1.12
765	0	501	5.90	1	5.90	6.74	0.87
766	0	745	6.71	1	6.71	7.78	0.86
767	0	923	7.23	1	7.23	6.83	1.06
768	0	1068	7.61	1	7.61	8.27	0.92
769	0	1170	7.88	1	7.88	8.70	0.91
770	0	1173	7.89	1	7.89	7.76	1.02
771	0	1179	7.90	1	7.90	8.54	0.92
772	0	1212	7.99	1	7.99	8.70	0.92
773	0	1100	7.69	1	7.69	6.76	1.14
774	0	995	7.42	1	7.42	6.59	1.13
775	0	1026	7.50	1	7.50	7.25	1.04
776	0	1060	7.59	1	7.59	7.47	1.02
777	0	1015	7.47	1	7.47	6.57	1.14
778	0	1013	7.47	1	7.47	7.50	1.00
779	0	1101	7.70	1	7.70	7.53	1.02
780	0	998	7.43	1	7.43	7.43	1.00
781	0	828	6.98	1	6.98	6.69	1.04
782	0	771	6.79	1	6.79	6.24	1.09
783	0	771	6.79	1	6.79	6.67	1.02
784	0	731	6.66	1	6.66	6.71	0.99
785	0	630	6.34	1	6.34	5.95	1.07
786	0	518	5.97	1	5.97	5.39	1.11
787	0	430	5.61	1	5.61	5.68	0.99
788	0	301	5.09	1	5.09	4.63	1.10
789	0	210	4.62	1	4.62	4.26	1.09
790	0	212	4.63	1	4.63	4.65	0.99
791	0	209	4.61	1	4.61	5.53	0.83
792	0	152	4.30	1	4.30	4.49	0.96

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ref} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ref}/V_{nac,m}$
793	0	144	4.25	1	4.25	4.50	0.94
794	0	127	4.16	1	4.16	4.54	0.92
795	0	144	4.26	1	4.26	5.50	0.77
796	0	111	4.08	1	4.08	4.36	0.94
797	0	140	4.24	1	4.24	4.77	0.89
798	0	242	4.79	1	4.79	4.99	0.96
799	0	239	4.77	1	4.77	5.08	0.94
800	0	200	4.56	1	4.56	5.05	0.90
801	0	133	4.20	1	4.20	4.85	0.87
802	0	168	4.39	1	4.39	4.52	0.97
803	0	263	4.91	1	4.91	5.06	0.97
804	0	381	5.41	1	5.41	6.04	0.90
805	0	512	5.94	1	5.94	7.13	0.83
806	0	618	6.30	1	6.30	6.45	0.98
807	0	539	6.04	1	6.04	5.39	1.12
808	0	396	5.47	1	5.47	4.85	1.13
809	0	407	5.52	1	5.52	6.34	0.87
810	0	466	5.75	1	5.75	6.12	0.94
811	0	492	5.86	1	5.86	6.65	0.88
812	0	452	5.70	1	5.70	6.56	0.87
813	0	409	5.53	1	5.53	5.50	1.00
814	0	285	5.02	1	5.02	4.62	1.09
815	0	234	4.75	1	4.75	5.26	0.90
816	0	223	4.69	1	4.69	4.80	0.98
817	0	216	4.65	1	4.65	5.18	0.90
818	0	175	4.42	1	4.42	4.56	0.97
819	0	123	4.14	1	4.14	4.35	0.95
820	0	100	4.02	1	4.02	4.23	0.95
821	0	104	4.04	1	4.04	4.33	0.93
822	0	103	4.03	1	4.03	5.16	0.78
823	0	162	4.36	1	4.36	5.14	0.85
824	0	254	4.86	1	4.86	4.90	0.99
825	0	230	4.73	1	4.73	5.09	0.93
826	0	310	5.12	1	5.12	6.19	0.83
827	0	328	5.20	1	5.20	5.65	0.92
828	0	330	5.20	1	5.20	5.36	0.97
829	0	410	5.53	1	5.53	5.75	0.96
830	0	478	5.80	1	5.80	5.99	0.97
831	0	565	6.13	1	6.13	6.44	0.95
832	0	603	6.25	1	6.25	6.48	0.97
833	0	601	6.24	1	6.24	5.92	1.05
834	0	529	6.01	1	6.01	5.52	1.09
835	0	392	5.45	1	5.45	4.66	1.17
836	0	379	5.40	1	5.40	5.50	0.98
837	0	1632		0	9.57	9.42	
838	0	1671		0	9.26	9.11	
839	0	1590	9.94	0	9.50	9.35	
840	0	1627		0	9.91	9.75	
841	0	1616	10.81	0	9.54	9.38	
842	0	1649		0	10.69	10.52	
843	0	1617	10.85	0	11.50	11.32	
844	0	1603	10.26	0	10.89	10.72	
845	0	1628		0	10.39	10.23	
846	0	1618	10.91	0		8.86	
847	0	1623		0		9.05	
848	0	1481	9.02	1	9.02	10.16	0.89
849	0	1359	8.55	1	8.55	9.07	0.94
850	0	1337	8.46	1	8.46	7.80	1.08
851	0	1410	8.74	1	8.74	8.95	0.98
852	0	1472	8.98	1	8.98	8.72	1.03
853	0	1453	8.91	1	8.91	8.06	1.10
854	0	1343	8.48	1	8.48	7.66	1.11
855	0	1496	9.15	1	9.15	8.29	1.10
856	0	1452	8.90	1	8.90	8.07	1.10
857	0	1376	8.61	1	8.61	7.86	1.10
858	0	1425	8.80	1	8.80	8.75	1.01
859	0	1612	10.63	0		8.55	
860	0	1647		0	9.49	9.34	
861	0	1617	10.89	0	9.57	9.42	
862	0	1613	10.69	0		8.67	
863	0	1603	10.25	0	9.74	9.59	
864	0	1577	9.83	0		7.37	
865	0	1646		0	9.41	9.26	
866	0	1645		0	11.22	11.04	
867	0	1623		0		8.72	
868	0	1623		0	10.50	10.34	
869	0	1621		0	9.40	9.25	
870	0	1623		0	10.39	10.23	
871	0	1634		0	11.61	11.43	
872	0	1611	10.60	0	12.01	11.82	
873	0	1614	10.74	0	10.16	10.00	
874	0	1619	10.97	0		8.33	
875	0	1644		0	10.27	10.11	
876	0	1622		0	9.60	9.45	
877	0	1631		0	10.11	9.95	
878	0	1625		0	10.04	9.88	
879	0	1597	10.00	0	10.04	9.88	
880	0	1634		0	9.69	9.54	

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ref} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ref}/V_{nac,m}$
881	0	1616	10.81	0	9.89	9.74	
882	0	1633		0	9.62	9.47	
883	0	1623		0		8.49	
884	0	1632		0		8.72	
885	0	1641		0		8.79	
886	0	1649		0	10.19	10.03	
887	0	1617	10.88	0	11.13	10.95	
888	0	1612	10.67	0	10.29	10.13	
889	0	1628		0	10.78	10.61	
890	0	1624		0	11.76	11.57	
891	0	1618	10.92	0	10.41	10.24	
892	0	1619	10.95	0	10.63	10.47	
893	0	1624		0	10.25	10.09	
894	0	1631		0	9.28	9.13	
895	0	1634		0	9.55	9.40	
896	0	1622		0		8.79	
897	0	1621		0		9.04	
898	0	1598	10.03	0		8.18	
899	0	1633		0		8.94	
900	0	1630		0		8.33	
901	0	1652		0	9.89	9.74	
902	0	1619	10.96	0	10.39	10.23	
903	0	1632		0	9.70	9.55	
904	0	1613	10.70	0		8.23	
905	0	1615	10.77	0	9.26	9.11	
906	0	1652		0	11.41	11.23	
907	0	1586	9.91	0	9.74	9.59	
908	0	1610	10.56	0	9.27	9.13	
909	0	1551	9.61	0		8.26	
910	0	1341	8.48	1	8.48	7.25	1.17
911	0	1660		0	9.83	9.67	
912	0	1635		0	9.51	9.36	
913	0	1617	10.87	0		8.09	
914	0	1427	8.81	1	8.81	7.28	1.21
915	0	1093	7.68	1	7.68	6.36	1.21
916	0	972	7.36	1	7.36	6.73	1.09
917	0	946	7.29	1	7.29	7.14	1.02
918	0	1159	7.85	1	7.85	10.00	0.79
919	0	1631		0	9.82	9.67	
920	0	1642		0		8.27	
921	0	1644		0		9.08	
922	0	1615	10.77	0	10.17	10.01	
923	0	1604	10.31	0		8.43	
924	0	1645		0	10.11	9.95	
925	0	1620	10.98	0	10.56	10.40	
926	0	1608	10.50	0	9.82	9.67	
927	0	1610	10.57	0		8.95	
928	0	1633		0	9.48	9.33	
929	0	1647		0	9.70	9.55	
930	0	1621		0	9.76	9.61	
931	0	1624		0	9.93	9.77	
932	0	1601	10.17	0		8.85	
933	0	1600	10.13	0		7.77	
934	0	1612	10.65	0		8.07	
935	0	1671		0	10.70	10.54	
936	0	1672		0	10.42	10.25	
937	0	1617	10.85	0	9.49	9.34	
938	0	1608	10.47	0	9.94	9.79	
939	0	1622		0		8.65	
940	0	1622		0		9.10	
941	0	1636		0	10.45	10.28	
942	0	1622		0	10.90	10.73	
943	0	1617	10.87	0	11.00	10.82	
944	0	1620	10.98	0	10.28	10.11	
945	0	1642		0	10.27	10.11	
946	0	1622		0	11.48	11.30	
947	0	1623		0	12.49	12.29	
948	0	1621		0	11.78	11.60	
949	0	1614	10.74	0	9.86	9.71	
950	0	1619	10.98	0	9.33	9.18	
951	0	1641		0		8.17	
952	0	1629		0	9.91	9.75	
953	0	1608	10.47	0		8.90	
954	0	1646		0	9.89	9.73	
955	0	1626		0	10.12	9.97	
956	0	1631		0	11.13	10.95	
957	0	1610	10.58	0	10.52	10.35	
958	0	1618	10.90	0	9.67	9.52	
959	0	1642		0	11.00	10.82	
960	0	1631		0	12.08	11.89	
961	0	1624		0	11.35	11.17	
962	0	1621		0	12.31	12.11	
963	0	1619	10.96	0	11.08	10.91	
964	0	1630		0	10.89	10.72	
965	0	1625		0	10.08	9.93	
966	0	1623		0	12.05	11.86	
967	0	1630		0	10.46	10.30	
968	0	1623		0	11.63	11.44	

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ref} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ref}/V_{nac,m}$
969	0	1628		0	11.62	11.44	
970	0	1623		0	11.82	11.64	
971	0	1626		0	10.72	10.55	
972	0	1631		0	11.51	11.33	
973	0	1620		0	11.46	11.28	
974	0	1627		0	11.17	10.99	
975	0	1625		0	10.10	9.94	
976	0	1628		0	11.34	11.16	
977	0	1625		0	10.84	10.67	
978	0	1626		0	10.62	10.46	
979	0	1627		0	10.89	10.72	
980	0	1627		0	11.64	11.46	
981	0	1622		0	11.52	11.34	
982	0	1621		0	11.86	11.67	
983	0	1630		0	10.51	10.35	
984	0	1628		0	11.58	11.40	
985	0	1624		0	11.82	11.64	
986	0	1624		0	10.90	10.73	
987	0	1631		0	10.41	10.25	
988	0	1625		0	10.72	10.55	
989	0	1623		0	10.49	10.32	
990	0	1623		0	10.33	10.17	
991	0	1630		0	11.29	11.11	
992	0	1619	10.95	0	11.57	11.38	
993	0	1624		0	9.80	9.64	
994	0	1625		0	10.42	10.25	
995	0	1613	10.71	0	9.84	9.69	
996	0	1637		0		9.01	
997	0	1630		0	9.50	9.35	
998	0	1650		0	9.73	9.58	
999	0	1624		0	11.26	11.08	
1000	0	1619	10.96	0	9.77	9.62	
1001	0	1624		0	10.60	10.43	
1002	0	1623		0	10.50	10.33	
1003	0	1624		0	10.95	10.78	
1004	0	1620		0	11.29	11.11	
1005	0	1612	10.64	0	10.15	9.99	
1006	0	1638		0	9.81	9.65	
1007	0	1618	10.90	0	9.95	9.80	
1008	0	1611	10.61	0		9.01	
1009	0	1649		0	9.75	9.59	
1010	0	1634		0	9.82	9.66	
1011	0	1625		0	10.02	9.86	
1012	0	1631		0	10.65	10.48	
1013	0	1624		0	10.87	10.70	
1014	0	1620		0	10.50	10.33	
1015	0	1625		0	10.38	10.22	
1016	0	1622		0	10.39	10.22	
1017	0	1624		0	10.76	10.59	
1018	0	1622		0	10.49	10.32	
1019	0	1621		0		9.00	
1020	0	1633		0	9.85	9.69	
1021	0	1620		0	9.59	9.44	
1022	0	1624		0	10.43	10.27	
1023	0	1623		0		9.10	
1024	0	1623		0		8.98	
1025	0	1643		0	9.92	9.77	
1026	0	1626		0	9.71	9.56	
1027	0	1611	10.63	0	9.85	9.69	
1028	0	1634		0	10.43	10.27	
1029	0	1633		0	9.52	9.37	
1030	0	1624		0	11.27	11.09	
1031	0	1619	10.95	0	10.58	10.41	
1032	0	1627		0	10.43	10.27	
1033	0	1610	10.58	0	9.96	9.81	
1034	0	1636		0	10.13	9.97	
1035	0	1617	10.86	0	10.78	10.61	
1036	1	1632		0		10.06	
1037	1	1628		0		10.60	
1038	1	1618	10.92	0		10.96	
1039	1	1614	10.73	0		8.53	
1040	1	1640		0		10.79	
1041	0	1626		0	9.38	9.24	
1042	0	1626		0	10.95	10.77	
1043	0	1620		0	11.74	11.55	
1044	0	1622		0	10.00	9.85	
1045	0	1629		0	10.00	9.84	
1046	0	1636		0	9.85	9.70	
1047	0	1625		0	10.31	10.15	
1048	0	1617	10.87	0	11.43	11.24	
1049	1	1619	10.97	0		10.18	
1050	1	1633		0		10.23	
1051	1	1631		0		10.60	
1052	1	1622		0		11.42	
1053	1	1626		0		10.73	
1054	1	1606	10.39	0		10.13	
1055	1	1634		0		10.13	
1056	1	1622		0		11.15	

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ref} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ref}/V_{nac,m}$
1057	1	1622		0		10.07	
1058	1	1621		0		8.72	
1059	0	1638		0	10.08	9.93	
1060	0	1637		0	10.53	10.36	
1061	0	1615	10.77	0	10.07	9.91	
1062	0	1600	10.15	0		8.32	
1063	0	1630		0	9.78	9.62	
1064	0	1639		0		9.06	
1065	0	1649		0		8.73	
1066	0	1633		0		9.06	
1067	0	1615	10.79	0		9.09	
1068	0	1590	9.94	0		7.90	
1069	0	1607	10.45	0		8.34	
1070	0	1679		0	9.86	9.70	
1071	0	1654		0	10.47	10.30	
1072	0	1613	10.70	0	9.79	9.64	
1073	0	1606	10.37	0		8.08	
1074	0	1625		0	9.96	9.81	
1075	0	1625		0	9.92	9.76	
1076	0	1621		0	10.81	10.64	
1077	0	1621		0	10.90	10.73	
1078	0	1627		0	10.05	9.89	
1079	0	1627		0	10.13	9.97	
1080	0	1631		0	11.09	10.92	
1081	0	1618	10.90	0	10.47	10.30	
1082	0	1623		0	10.05	9.89	
1083	0	1629		0	9.49	9.34	
1084	0	1616	10.82	0	10.04	9.88	
1085	0	1632		0	10.01	9.85	
1086	0	1630		0	10.62	10.45	
1087	0	1622		0	9.62	9.47	
1088	0	1626		0	10.08	9.92	
1089	0	1619	10.98	0	10.61	10.44	
1090	0	1626		0	10.20	10.04	
1091	0	1629		0	10.14	9.98	
1092	0	1615	10.78	0	10.95	10.77	
1093	0	1619	10.98	0	9.82	9.66	
1094	0	1629		0	10.78	10.61	
1095	0	1623		0	10.05	9.89	
1096	0	1630		0	9.56	9.41	
1097	0	1627		0	9.78	9.63	
1098	0	1630		0	10.09	9.93	
1099	0	1613	10.69	0	9.98	9.82	
1100	0	1620		0		8.77	
1101	0	1634		0		8.19	
1102	0	1628		0	9.33	9.18	
1103	0	1631		0		8.54	
1104	0	1626		0		8.99	
1105	0	1641		0	9.63	9.48	
1106	0	1617	10.85	0	10.40	10.24	
1107	0	1614	10.76	0	10.03	9.87	
1108	0	1608	10.47	0	9.65	9.50	
1109	0	1632		0		8.88	
1110	0	1642		0	10.74	10.57	
1111	0	1628		0	10.72	10.55	
1112	0	1606	10.40	0	9.69	9.54	
1113	0	1623		0	9.61	9.46	
1114	0	1615	10.78	0	9.47	9.32	
1115	0	1628		0	10.36	10.19	
1116	0	1638		0	9.60	9.45	
1117	0	1626		0	9.64	9.49	
1118	0	1562	9.71	0		8.39	
1119	0	1537	9.50	0		8.33	
1120	0	1433	8.83	1	8.83	7.91	1.12
1121	0	1335	8.45	1	8.45	7.62	1.11
1122	0	1591	9.95	0		8.40	
1123	0	1463	8.94	1	8.94	8.83	1.01
1124	0	1527	9.41	0		9.01	
1125	0	1642		0		8.95	
1126	0	1598	10.06	0		7.90	
1127	0	1662		0		8.08	
1128	0	1609	10.52	0		8.65	
1129	0	1606	10.39	0		8.82	
1130	0	1607	10.42	0	9.84	9.69	
1131	0	1632		0	10.31	10.15	
1132	0	1628		0	10.08	9.92	
1133	0	1633		0	10.24	10.08	
1134	0	1630		0	11.29	11.11	
1135	0	1608	10.48	0	10.11	9.95	
1136	0	1623		0	11.44	11.26	
1137	0	1608	10.48	0	10.33	10.16	
1138	0	1604	10.30	0	9.58	9.43	
1139	0	1621		0		8.91	
1140	0	1629		0		8.16	
1141	0	1626		0		8.50	
1142	0	1677		0		8.85	
1143	0	1639		0	9.59	9.44	
1144	0	1646		0	9.43	9.28	

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ref} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ref}/V_{nac,m}$
1145	0	1612	10.65	0	9.94	9.78	
1146	0	1609	10.50	0	9.84	9.69	
1147	0	1617	10.87	0	10.41	10.24	
1148	0	1615	10.80	0	11.09	10.92	
1149	0	1623		0	10.12	9.96	
1150	0	1619	10.95	0	9.71	9.56	
1151	0	1623		0	9.52	9.37	
1152	0	1625		0		9.00	
1153	0	1626		0		8.90	
1154	0	1637		0	9.56	9.41	
1155	0	1623		0		8.96	
1156	0	1636		0		8.81	
1157	0	1629		0	9.95	9.79	
1158	0	1623		0	9.43	9.28	
1159	0	1623		0	9.46	9.31	
1160	0	1620		0		8.35	
1161	0	1629		0	9.63	9.48	
1162	0	1619	10.96	0	10.45	10.29	
1163	0	1605	10.37	0		8.85	
1164	0	1625		0	9.34	9.19	
1165	0	1645		0	10.66	10.49	
1166	0	1585	9.90	0	9.53	9.38	
1167	0	1577	9.83	0		8.14	
1168	0	1536	9.49	0		8.93	
1169	0	1452	8.90	1	8.90	9.31	0.96
1170	0	1502	9.20	1	9.20	8.22	1.12
1171	0	1494	9.14	1	9.14	8.65	1.06
1172	0	1525	9.39	0		7.94	
1173	0	1470	8.97	1	8.97	8.09	1.11
1174	0	1552	9.62	0		8.48	
1175	0	1656		0	10.11	9.95	
1176	0	1590	9.94	0		8.29	
1177	0	1552	9.62	0		8.99	
1178	0	1383	8.64	1	8.64	7.99	1.08
1179	0	1251	8.13	1	8.13	7.49	1.09
1180	0	1186	7.92	1	7.92	7.39	1.07
1181	0	1181	7.91	1	7.91	7.13	1.11
1182	0	1154	7.84	1	7.84	7.61	1.03
1183	0	1317	8.39	1	8.39	8.54	0.98
1184	0	1309	8.35	1	8.35	7.27	1.15
1185	0	1294	8.30	1	8.30	8.94	0.93
1186	0	1398	8.70	1	8.70	8.51	1.02
1187	0	1361	8.55	1	8.55	9.25	0.92
1188	0	1531	9.44	0		8.51	
1189	0	1626		0		8.23	
1190	0	1656		0	9.51	9.36	
1191	0	1536	9.49	0		7.97	
1192	0	1575	9.81	0		8.03	
1193	0	1499	9.17	1	9.17	9.03	1.02
1194	0	1667		0		8.66	
1195	0	1634		0		7.53	
1196	0	1602	10.20	0		8.35	
1197	0	1431	8.82	1	8.82	6.04	1.46
1198	0	1336	8.46	1	8.46	7.78	1.09
1199	0	1322	8.40	1	8.40	7.66	1.10
1200	0	1172	7.88	1	7.88	5.81	1.36
1201	0	1218	8.01	1	8.01	7.17	1.12
1202	0	1634		0		8.89	
1203	0	1618	10.90	0	9.29	9.14	
1204	0	1605	10.34	0	10.09	9.93	
1205	0	1580	9.86	0		8.75	
1206	0	1638		0		7.52	
1207	0	1617	10.88	0		7.20	
1208	0	1587	9.91	0		7.80	
1209	0	1551	9.61	0		7.65	
1210	0	1622		0	10.39	10.22	
1211	0	1555	9.65	0		8.95	
1212	0	1619	10.94	0	9.40	9.26	
1213	0	1638		0	9.44	9.29	
1214	0	1625		0	10.20	10.03	
1215	0	1615	10.76	0	9.42	9.28	
1216							
1217							
1218							
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1230							
1231							
1232							

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{ref} (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{ref}/V_{nac,m}$
1233							
1234							
1235							
1236							
1237							
1238							
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1320							

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2
Sample calculations have been based on measurement data collected and reported for Jericho Wind Farm (Report ID: 14662.00.T80.R5)

For all data points with power levels from the allowed range of the power curve, the average value of the ratio of the wind speed derived from the power curve VP,n and the measured wind speed $V_{Z,m}$, k_Z, is derived as per equation (1)
Information to calculate k_Z is provided in Table 1.

$$k_Z = \frac{1}{n}\left(\sum_{i=1}^{n}\left(\frac{v_{p,n}}{v_{Z,m}}\right)_i\right) \qquad (1)$$

whe
re

$V_{P,n}$ is wind speed derived from power curve

K_Z is Background k-factor

$V_{Z,n}$ is measured 10m wind speed

k_Z = 1.1507

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Table 1 - Information to calculate K_Z

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed in acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, $V_{z,m}$ (m/s)	$V_{hh}/V_{z,m}$
1	0	1036	7.53	1	7.53	5.43	1.39
2	0	848	7.03	1	7.03	4.88	1.44
3	0	705	6.58	1	6.58	4.97	1.32
4	0	574	6.15	1	6.15	4.88	1.26
5	0	508	5.93	1	5.93	5.71	1.04
6	0	519	5.97	1	5.97	6.22	0.96
7	0	602	6.24	1	6.24	7.23	0.86
8	0	804	6.90	1	6.90	7.00	0.99
9	0	1008	7.45	1	7.45	8.50	0.88
10	0	1080	7.64	1	7.64	6.91	1.11
11	0	973	7.36	1	7.36	6.17	1.19
12	0	925	7.24	1	7.24	5.99	1.21
13	0	992	7.41	1	7.41	6.15	1.21
14	0	1091	7.67	1	7.67	6.10	1.26
15	0	1026	7.50	1	7.50	5.57	1.35
16	0	950	7.30	1	7.30	5.56	1.31
17	0	1057	7.58	1	7.58	5.90	1.29
18	0	1112	7.73	1	7.73	6.69	1.16
19	0	1100	7.69	1	7.69	5.10	1.51
20	0	1187	7.92	1	7.92	5.32	1.49
21	0	1205	7.97	1	7.97	4.73	1.68
22	0	1046	7.55	1	7.55	4.61	1.64
23	0	912	7.20	1	7.20	7.17	1.00
24	0	772	6.80	1	6.80	7.22	0.94
25	0	605	6.25	1	6.25	6.81	0.92
26	0	579	6.17	1	6.17	6.45	0.96
27	0	731	6.66	1	6.66	6.14	1.09
28	0	820	6.95	1	6.95	6.41	1.08
29	0	801	6.89	1	6.89	6.09	1.13
30	0	728	6.65	1	6.65	6.98	0.95
31	0	786	6.84	1	6.84	7.32	0.93
32	0	986	7.40	1	7.40	7.32	1.01
33	0	1129	7.77	1	7.77	7.98	0.97
34	0	1178	7.90	1	7.90	7.75	1.02
35	0	1078	7.64	1	7.64	7.03	1.09
36	0	998	7.43	1	7.43	6.18	1.20
37	0	974	7.37	1	7.37	6.31	1.17
38	0	991	7.41	1	7.41	7.39	1.00
39	0	1013	7.47	1	7.47	6.61	1.13
40	0	1012	7.47	1	7.47	5.93	1.26
41	0	998	7.43	1	7.43	5.24	1.42
42	0	958	7.32	1	7.32	5.48	1.34
43	0	919	7.22	1	7.22	6.30	1.15
44	0	896	7.16	1	7.16	5.59	1.28
45	0	851	7.04	1	7.04	6.19	1.14
46	1	770	6.79	1		6.07	
47	1	700	6.56	1		5.82	
48	1	657	6.42	1		5.49	
49	0	657	6.42	1	6.42	6.35	1.01
50	0	646	6.39	1	6.39	6.12	1.04
51	0	588	6.20	1	6.20	5.87	1.06
52	0	633	6.35	1	6.35	5.89	1.08
53	1	679	6.50	1		6.64	
54	1	654	6.41	1		6.39	
55	1	655	6.42	1		6.47	
56	1	679	6.50	1		6.19	
57	1	680	6.50	1		5.25	
58	1	626	6.32	1		6.70	
59	1	609	6.27	1		7.25	
60	1	655	6.42	1		6.28	
61	1	691	6.53	1		7.41	
62	0	704	6.57	1	6.57	8.20	0.80
63	0	798	6.88	1	6.88	6.94	0.99
64	0	964	7.34	1	7.34	6.91	1.06
65	0	1098	7.69	1	7.69	7.03	1.09
66	0	1062	7.59	1	7.59	6.99	1.09
67	0	974	7.36	1	7.36	5.59	1.32
68	0	1005	7.45	1	7.45	7.07	1.05
69	0	1034	7.52	1	7.52	8.12	0.93
70	0	952	7.31	1	7.31	7.17	1.02
71	0	850	7.04	1	7.04	6.97	1.01
72	0	726	6.65	1	6.65	6.78	0.98
73	0	602	6.25	1	6.25	6.10	1.02
74	0	568	6.14	1	6.14	6.15	1.00
75	0	578	6.17	1	6.17	5.34	1.15
76	0	558	6.10	1	6.10	5.74	1.06
77	0	577	6.17	1	6.17	6.97	0.88
78	0	622	6.31	1	6.31	6.27	1.01
79	0	694	6.54	1	6.54	7.02	0.93
80	0	787	6.85	1	6.85	7.61	0.90
81	0	761	6.76	1	6.76	6.87	0.98
82	0	705	6.58	1	6.58	6.91	0.95
83	0	777	6.81	1	6.81	6.43	1.06
84	0	788	6.85	1	6.85	6.36	1.08
85	0	766	6.78	1	6.78	5.96	1.14
86	0	769	6.78	1	6.78	5.44	1.25
87	0	753	6.73	1	6.73	6.06	1.11
88	0	727	6.65	1	6.65	6.42	1.04
89	0	701	6.57	1	6.57	5.50	1.19
90	0	701	6.57	1	6.57	5.42	1.21
91	0	723	6.64	1	6.64	4.56	1.46
92	0	772	6.80	1	6.80	5.13	1.33
93	0	906	7.19	1	7.19	5.02	1.43
94	0	926	7.24	1	7.24	6.43	1.13
95	0	848	7.03	1	7.03	8.30	0.85
96	0	975	7.37	1	7.37	7.31	1.01
97	0	1627		0	11.18	6.98	
98	0	1608	10.48	0	10.68	6.53	
99	0	1542	9.54	0	9.59	7.23	
100	0	1626		0		7.71	
101	0	1610	10.56	0		7.59	
102	0	1603	10.24	0	9.85	8.25	
103	0	1416	8.76	1	8.76	7.89	1.11
104	0	1203	7.97	1	7.97	7.06	1.13
105	0	1159	7.85	1	7.85	5.81	1.35
106	0	1321	8.40	1	8.40	5.46	1.54
107	0	1256	8.15	1	8.15	5.49	1.49
108	0	1071	7.62	1	7.62	5.35	1.42
109	0	931	7.25	1	7.25	6.28	1.15
110	0	789	6.85	1	6.85	5.73	1.19
111	0	647	6.39	1	6.39	5.83	1.10
112	0	544	6.06	1	6.06	5.62	1.08
113	0	520	5.97	1	5.97	4.97	1.20
114	0	543	6.06	1	6.06	4.30	1.41
115	0	519	5.97	1	5.97	5.54	1.08
116	0	408	5.52	1	5.52	6.22	0.89
117	0	295	5.06	1	5.06	5.53	0.91
118	0	258	4.88	1	4.88	7.03	0.69
119	0	315	5.14	1	5.14	7.33	0.70
120	0	324	5.18	1	5.18	8.06	0.64
121	0	400	5.49	1	5.49	6.22	0.88
122	0	405	5.51	1	5.51	5.70	0.97
123	0	402	5.50	1	5.50	5.57	0.99
124	0	447	5.68	1	5.68	6.27	0.91
125	0	692	6.54	1	6.54	6.11	1.07
126	0	1138	7.79	1	7.79	6.95	1.12
127	0	1266	8.19	1	8.19	7.11	1.15
128	0	1139	7.80	1	7.80	7.39	1.05
129	0	1126	7.76	1	7.76	5.62	1.38
130	0	1178	7.90	1	7.90	5.19	1.52
131	0	1047	7.56	1	7.56	5.32	1.42
132	0	815	6.93	1	6.93	6.06	1.14
133	0	726	6.65	1	6.65	5.59	1.19
134	0	838	7.01	1	7.01	5.30	1.32
135	0	1040	7.54	1	7.54	7.35	1.03
136	0	1289	8.28	1	8.28	6.06	1.37
137	0	1210	7.99	1	7.99	5.91	1.35
138	0	1170	7.88	1	7.88	5.48	1.44
139	0	1243	8.10	1	8.10	5.89	1.38
140	0	1224	8.03	1	8.03	5.64	1.42
141	0	1113	7.73	1	7.73	5.52	1.40
142	0	925	7.24	1	7.24	5.82	1.24
143	0	784	6.84	1	6.84	6.09	1.12
144	0	678	6.49	1	6.49	5.54	1.17
145	0	646	6.39	1	6.39	5.46	1.17
146	0	717	6.62	1	6.62	4.94	1.34
147	0	769	6.78	1	6.78	5.21	1.30
148	0	677	6.49	1	6.49	6.90	0.94
149	0	511	5.94	1	5.94	6.83	0.87
150	0	395	5.47	1	5.47	5.86	0.93
151	0	405	5.51	1	5.51	5.99	0.92
152	0	396	5.47	1	5.47	7.33	0.75
153	0	222	4.68	1	4.68	5.50	0.85
154	0	329	5.20	1	5.20	6.12	0.85
155	0	476	5.80	1	5.80	6.19	0.94
156	0	801	6.89	1	6.89	7.13	0.97
157	0	1332	8.44	1	8.44	7.16	1.18
158	0	1362	8.56	1	8.56	6.30	1.36
159	0	1152	7.83	1	7.83	7.07	1.11
160	0	1026	7.50	1	7.50	7.85	0.96
161	0	981	7.38	1	7.38	7.92	0.93
162	0	977	7.37	1	7.37	6.76	1.09
163	0	957	7.32	1	7.32	6.51	1.12
164	0	1013	7.47	1	7.47	5.97	1.25
165	0	1050	7.56	1	7.56	5.92	1.28
166	0	992	7.41	1	7.41	5.96	1.24
167	0	897	7.16	1	7.16	5.52	1.30
168	0	848	7.03	1	7.03	5.38	1.31
169	0	813	6.93	1	6.93	5.71	1.21
170	0	805	6.90	1	6.90	4.92	1.40
171	0	738	6.69	1	6.69	4.09	1.63
172	0	655	6.42	1	6.42	4.51	1.42
173	0	623	6.31	1	6.31	6.75	0.94
174	0	694	6.54	1	6.54	7.26	0.90
175	0	771	6.79	1	6.79	7.37	0.92
176	0	693	6.54	1	6.54	7.53	0.87
177	0	772	6.80	1	6.80	6.94	0.98
178	0	1142	7.80	1	7.80	6.32	1.24
179	0	1333	8.45	1	8.45	5.38	1.57
180	0	1110	7.72	1	7.72	5.77	1.34
181	0	894	7.16	1	7.16	5.44	1.32
182	0	798	6.88	1	6.88	5.01	1.37
183	0	713	6.61	1	6.61	4.67	1.42
184	0	649	6.40	1	6.40	5.25	1.22
185	0	666	6.45	1	6.45	5.16	1.25
186	0	741	6.69	1	6.69	6.60	1.01
187	0	733	6.67	1	6.67	5.68	1.17
188	0	667	6.46	1	6.46	6.07	1.06
189	0	664	6.45	1	6.45	6.42	1.00
190	0	704	6.58	1	6.58	6.74	0.98
191	0	740	6.69	1	6.69	6.93	0.97
192	0	726	6.65	1	6.65	6.12	1.09
193	0	774	6.80	1	6.80	5.77	1.18
194	0	894	7.15	1	7.15	5.62	1.27
195	0	893	7.15	1	7.15	5.22	1.37
196	0	827	6.97	1	6.97	5.36	1.30
197	0	806	6.91	1	6.91	5.41	1.28
198	0	776	6.81	1	6.81	5.03	1.35
199	0	729	6.66	1	6.66	5.54	1.20
200	0	792	6.86	1	6.86	5.82	1.18
201	0	882	7.12	1	7.12	5.35	1.33
202	0	874	7.10	1	7.10	5.92	1.20
203	0	811	6.92	1	6.92	5.97	1.16
204	0	704	6.58	1	6.58	5.92	1.11
205	0	679	6.49	1	6.49	5.54	1.17
206	0	779	6.82	1	6.82	5.43	1.26
207	0	949	7.30	1	7.30	5.68	1.29
208	0	983	7.39	1	7.39	6.43	1.15
209	0	964	7.34	1	7.34	6.18	1.19
210	0	949	7.30	1	7.30	6.85	1.07
211	0	924	7.23	1	7.23	7.19	1.01
212	0	922	7.23	1	7.23	7.31	0.99
213	0	969	7.35	1	7.35	6.38	1.15
214	0	946	7.29	1	7.29	5.97	1.22
215	0	838	7.01	1	7.01	6.09	1.15
216	0	699	6.56	1	6.56	5.51	1.19
217	0	594	6.22	1	6.22	4.77	1.30
218	0	579	6.17	1	6.17	4.71	1.31
219	0	571	6.14	1	6.14	4.89	1.26
220	0	584	6.19	1	6.19	5.63	1.10
221	0	641	6.37	1	6.37	5.34	1.19
222	0	661	6.44	1	6.44	4.92	1.31
223	0	628	6.33	1	6.33	5.45	1.16
224	0	541	6.05	1	6.05	4.80	1.26
225	0	456	5.72	1	5.72	4.06	1.41
226	0	450	5.69	1	5.69	4.31	1.32
227	0	499	5.89	1	5.89	4.70	1.25
228	0	607	6.26	1	6.26	4.10	1.53
229	0	696	6.55	1	6.55	3.66	1.79
230	0	735	6.68	1	6.68	4.20	1.59
231	0	856	7.05	1	7.05	4.67	1.51
232	0	981	7.38	1	7.38	4.24	1.74
233	0	965	7.34	1	7.34	3.85	1.91
234	0	802	6.89	1	6.89	3.46	1.99
235	0	602	6.25	1	6.25	3.81	1.64
236	0	502	5.90	1	5.90	5.56	1.06
237	0	484	5.83	1	5.83	7.52	0.78
238	0	383	5.42	1	5.42	7.96	0.68
239	0	276	4.98	1	4.98	6.91	0.72
240	0	420	5.57	1	5.57	6.14	0.91
241	0	519	5.97	1	5.97	5.51	1.08
242	0	650	6.40	1	6.40	4.91	1.30
243	0	714	6.61	1	6.61	4.41	1.50
244	0	744	6.70	1	6.70	3.91	1.71
245	0	718	6.62	1	6.62	3.96	1.67
246	0	642	6.38	1	6.38	4.36	1.46
247	0	554	6.09	1	6.09	4.40	1.39
248	0	477	5.80	1	5.80	3.75	1.55
249	0	358	5.32	1	5.32	4.85	1.10
250	0	238	4.77	1	4.77	4.48	1.06
251	0	191	4.51	1	4.51	5.36	0.84
252	0	187	4.49	1	4.49	5.24	0.86
253	0	217	4.65	1	4.65	5.53	0.84
254	0	284	5.02	1	5.02	5.29	0.95
255	0	261	4.89	1	4.89	5.86	0.83
256	0	257	4.87	1	4.87	6.45	0.76
257	0	339	5.24	1	5.24	5.49	0.96
258	0	372	5.37	1	5.37	6.28	0.86
259	0	291	5.04	1	5.04	6.01	0.84
260	0	377	5.39	1	5.39	6.26	0.86
261	0	413	5.54	1	5.54	7.27	0.76
262	0	539	6.04	1	6.04	7.75	0.78
263	0	760	6.76	1	6.76	8.37	0.81
264	0	937	7.27	1	7.27	8.64	0.84

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
265	0	999	7.43	1	7.43	7.81	0.95
266	0	1020	7.48	1	7.48	8.51	0.88
267	0	976	7.37	1	7.37	6.93	1.06
268	0	1009	7.46	1	7.46	7.02	1.06
269	0	1043	7.55	1	7.55	7.93	0.95
270	0	997	7.42	1	7.42	7.23	1.03
271	0	957	7.32	1	7.32	6.56	1.12
272	0	873	7.10	1	7.10	5.75	1.23
273	0	738	6.69	1	6.69	4.95	1.35
274	0	779	6.82	1	6.82	7.47	0.91
275	0	858	7.06	1	7.06	6.64	1.06
276	0	777	6.81	1	6.81	6.09	1.12
277	0	717	6.62	1	6.62	5.60	1.18
278	0	659	6.43	1	6.43	4.89	1.32
279	0	568	6.14	1	6.14	5.06	1.21
280	0	497	5.88	1	5.88	4.89	1.20
281	0	463	5.74	1	5.74	5.88	0.98
282	0	506	5.92	1	5.92	6.54	0.91
283	0	707	6.59	1	6.59	6.70	0.98
284	0	916	7.21	1	7.21	7.06	1.02
285	0	970	7.36	1	7.36	5.57	1.32
286	0	891	7.15	1	7.15	5.60	1.28
287	0	742	6.70	1	6.70	6.50	1.03
288	0	626	6.32	1	6.32	7.44	0.85
289	0	647	6.39	1	6.39	6.75	0.95
290	0	849	7.04	1	7.04	6.85	1.03
291	0	1149	7.82	1	7.82	6.62	1.18
292	0	1099	7.69	1	7.69	6.90	1.12
293	0	902	7.18	1	7.18	5.74	1.25
294	0	714	6.61	1	6.61	5.04	1.31
295	0	587	6.20	1	6.20	4.34	1.43
296	0	604	6.25	1	6.25	4.73	1.32
297	0	675	6.48	1	6.48	4.71	1.38
298	0	648	6.39	1	6.39	4.63	1.38
299	0	537	6.04	1	6.04	5.02	1.20
300	0	411	5.53	1	5.53	5.46	1.01
301	0	377	5.39	1	5.39	5.10	1.06
302	0	359	5.32	1	5.32	4.60	1.16
303	0	300	5.08	1	5.08	4.35	1.17
304	0	270	4.95	1	4.95	4.34	1.14
305	0	335	5.22	1	5.22	3.89	1.34
306	0	389	5.44	1	5.44	4.83	1.13
307	0	456	5.72	1	5.72	8.41	0.68
308	0	763	6.77	1	6.77	9.68	0.70
309	0	1340	8.47	1	8.47	9.03	0.94
310	0	1644		0		8.97	
311	0	1629		0		8.80	
312	0	1625		0		8.42	
313	0	1633		0		7.00	
314	0	1646		0	9.56	7.25	
315	0	1607	10.46	0		6.84	
316	0	1602	10.23	0		6.59	
317	0	1580	9.86	0		7.20	
318	0	1377	8.61	1	8.61	7.19	1.20
319	0	1270	8.21	1	8.21	7.81	1.05
320	0	1282	8.25	1	8.25	6.47	1.28
321	0	1277	8.23	1	8.23	5.47	1.50
322	0	1187	7.92	1	7.92	7.31	1.08
323	0	1135	7.79	1	7.79	6.93	1.12
324	0	1007	7.45	1	7.45	5.28	1.41
325	0	841	7.01	1	7.01	6.77	1.04
326	0	747	6.72	1	6.72	7.08	0.95
327	0	822	6.96	1	6.96	7.51	0.93
328	0	975	7.37	1	7.37	7.39	1.00
329	0	1118	7.74	1	7.74	5.78	1.34
330	0	1166	7.87	1	7.87	5.82	1.35
331	0	1108	7.72	1	7.72	6.47	1.19
332	0	1083	7.65	1	7.65	6.48	1.18
333	0	1038	7.53	1	7.53	6.52	1.15
334	0	952	7.31	1	7.31	6.95	1.05
335	0	845	7.03	1	7.03	7.05	1.00
336	0	768	6.78	1	6.78	6.95	0.98
337	0	752	6.73	1	6.73	6.06	1.11
338	0	797	6.88	1	6.88	7.99	0.86
339	0	847	7.03	1	7.03	7.01	1.00
340	0	896	7.16	1	7.16	6.42	1.12
341	0	1108	7.72	1	7.72	6.91	1.12
342	0	1244	8.11	1	8.11	7.05	1.15
343	1	1277	8.23	1		6.26	
344	1	1009	7.46	1		6.37	
345	1	459	5.73	1		6.77	
346	1	201	4.57	1		6.71	
347	1	100	4.02	1		5.98	
348	1	100	4.02	1		5.61	
349	1	100	4.02	1		6.66	
350	1	100	4.02	1		6.86	
351	1	100	4.02	1		5.54	
352	1	100	4.02	1		6.90	

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
353	1	100	4.02	1		7.67	
354	1	100	4.02	1		6.75	
355	1	100	4.02	1		6.71	
356	1	100	4.02	1		7.51	
357	1	100	4.02	1		7.29	
358	1	100	4.02	1		6.97	
359	1	100	4.02	1		6.60	
360	1	100	4.02	1		6.74	
361	1	100	4.02	1		7.09	
362	1	100	4.02	1		8.58	
363	1	100	4.02	1		8.87	
364	1	100	4.02	1		8.26	
365	1	100	4.02	1		6.90	
366	1	100	4.02	1		6.64	
367	1	100	4.02	1		8.26	
368	1	100	4.02	1		7.32	
369	1	100	4.02	1		6.89	
370	1	102	4.03	1		6.72	
371	1	361	5.33	1		5.85	
372	1	648	6.39	1		6.03	
373	1	614	6.29	1		5.96	
374	1	803	6.90	1		5.66	
375	1	906	7.19	1		5.65	
376	0	894	7.15	1	7.15	5.50	1.30
377	0	927	7.24	1	7.24	4.88	1.48
378	0	801	6.89	1	6.89	5.12	1.35
379	0	673	6.48	1	6.48	6.37	1.02
380	0	603	6.25	1	6.25	6.92	0.90
381	0	559	6.11	1	6.11	6.04	1.01
382	0	577	6.16	1	6.16	7.19	0.86
383	0	833	6.99	1	6.99	7.16	0.98
384	0	1150	7.83	1	7.83	6.71	1.17
385	0	1246	8.11	1	8.11	6.97	1.16
386	0	1321	8.40	1	8.40	6.96	1.21
387	0	1352	8.52	1	8.52	6.05	1.41
388	0	1232	8.06	1	8.06	5.92	1.36
389	0	1186	7.92	1	7.92	5.27	1.50
390	0	1102	7.70	1	7.70	4.76	1.62
391	0	827	6.97	1	6.97	5.76	1.21
392	0	608	6.27	1	6.27	7.45	0.84
393	0	565	6.13	1	6.13	6.80	0.90
394	0	607	6.26	1	6.26	6.02	1.04
395	0	653	6.41	1	6.41	6.56	0.98
396	0	704	6.58	1	6.58	7.61	0.86
397	0	640	6.37	1	6.37	6.85	0.93
398	0	642	6.38	1	6.38	6.29	1.01
399	0	818	6.95	1	6.95	6.26	1.11
400	0	908	7.19	1	7.19	4.60	1.56
401	0	856	7.06	1	7.06	3.60	1.96
402	0	775	6.81	1	6.81	3.35	2.04
403	0	689	6.53	1	6.53	4.35	1.50
404	0	584	6.19	1	6.19	4.03	1.54
405	0	538	6.04	1	6.04	4.54	1.33
406	0	652	6.41	1	6.41	6.86	0.93
407	0	882	7.12	1	7.12	6.96	1.02
408	0	982	7.39	1	7.39	6.80	1.09
409	0	1026	7.50	1	7.50	5.15	1.46
410	0	1067	7.61	1	7.61	4.73	1.61
411	0	1270	8.21	1	8.21	6.62	1.24
412	0	1280	8.24	1	8.24	7.28	1.13
413	0	1165	7.87	1	7.87	5.93	1.33
414	0	1165	7.87	1	7.87	5.38	1.46
415	0	1065	7.60	1	7.60	5.50	1.38
416	0	948	7.30	1	7.30	5.80	1.26
417	0	850	7.04	1	7.04	6.59	1.07
418	0	740	6.69	1	6.69	6.05	1.11
419	0	676	6.48	1	6.48	6.26	1.04
420	0	626	6.32	1	6.32	5.33	1.19
421	0	614	6.28	1	6.28	5.03	1.25
422	0	620	6.30	1	6.30	3.66	1.72
423	0	566	6.13	1	6.13	4.74	1.29
424	0	526	6.00	1	6.00	4.36	1.38
425	0	506	5.92	1	5.92	4.74	1.25
426	0	455	5.71	1	5.71	5.49	1.04
427	0	414	5.55	1	5.55	5.65	0.98
428	0	426	5.59	1	5.59	5.70	0.98
429	0	460	5.73	1	5.73	6.81	0.84
430	0	583	6.18	1	6.18	7.01	0.88
431	0	693	6.54	1	6.54	7.01	0.93
432	0	671	6.47	1	6.47	7.45	0.87
433	0	721	6.63	1	6.63	6.76	0.98
434	0	798	6.88	1	6.88	6.57	1.05
435	0	800	6.89	1	6.89	6.08	1.13
436	0	748	6.72	1	6.72	5.72	1.17
437	0	713	6.61	1	6.61	6.38	1.03
438	0	777	6.81	1	6.81	6.72	1.01
439	0	821	6.95	1	6.95	7.02	0.99
440	0	759	6.75	1	6.75	7.71	0.88

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
441	0	709	6.59	1	6.59	6.34	1.04
442	0	690	6.53	1	6.53	6.07	1.08
443	0	650	6.40	1	6.40	4.98	1.29
444	0	648	6.39	1	6.39	4.83	1.32
445	0	676	6.49	1	6.49	4.80	1.35
446	0	659	6.43	1	6.43	4.05	1.59
447	0	597	6.23	1	6.23	4.86	1.28
448	0	629	6.33	1	6.33	5.40	1.17
449	0	685	6.52	1	6.52	6.27	1.04
450	0	706	6.58	1	6.58	5.79	1.14
451	0	684	6.51	1	6.51	4.58	1.42
452	0	611	6.27	1	6.27	4.79	1.31
453	0	619	6.30	1	6.30	4.46	1.41
454	0	650	6.40	1	6.40	5.22	1.23
455	0	590	6.21	1	6.21	6.71	0.93
456	0	508	5.93	1	5.93	8.47	0.70
457	0	472	5.78	1	5.78	7.02	0.82
458	0	578	6.17	1	6.17	6.21	0.99
459	0	599	6.24	1	6.24	6.74	0.93
460	0	683	6.51	1	6.51	6.44	1.01
461	0	893	7.15	1	7.15	6.71	1.07
462	0	1158	7.85	1	7.85	6.62	1.19
463	0	1146	7.82	1	7.82	6.93	1.13
464	0	1145	7.81	1	7.81	6.40	1.22
465	0	1411	8.74	1	8.74	6.88	1.27
466	0	1555	9.65	0	9.38	7.50	
467	0	1558	9.68	0		7.57	
468	0	1412	8.75	1	8.75	5.20	1.68
469	0	1296	8.31	1	8.31	5.52	1.50
470	0	1272	8.21	1	8.21	4.82	1.70
471	0	1342	8.48	1	8.48	5.73	1.48
472	0	1432	8.83	1	8.83	5.71	1.55
473	0	1295	8.30	1	8.30	5.67	1.46
474	0	1159	7.85	1	7.85	5.82	1.35
475	0	1090	7.67	1	7.67	5.99	1.28
476	0	1171	7.88	1	7.88	5.44	1.45
477	0	1119	7.74	1	7.74	5.92	1.31
478	0	933	7.26	1	7.26	5.82	1.25
479	0	751	6.73	1	6.73	4.92	1.37
480	0	587	6.20	1	6.20	4.81	1.29
481	0	446	5.68	1	5.68	4.69	1.21
482	0	318	5.15	1	5.15	4.13	1.25
483	0	401	5.49	1	5.49	3.19	1.72
484	0	422	5.58	1	5.58	4.15	1.34
485	0	434	5.63	1	5.63	4.58	1.23
486	0	526	6.00	1	6.00	5.31	1.13
487	0	746	6.71	1	6.71	9.26	0.72
488	0	899	7.17	1	7.17	9.37	0.76
489	0	925	7.24	1	7.24	6.91	1.05
490	0	991	7.41	1	7.41	6.85	1.08
491	0	1177	7.90	1	7.90	7.81	1.01
492	0	1277	8.23	1	8.23	6.55	1.26
493	0	1151	7.83	1	7.83	6.11	1.28
494	0	978	7.37	1	7.37	6.75	1.09
495	0	897	7.16	1	7.16	7.14	1.00
496	0	919	7.22	1	7.22	6.03	1.20
497	0	985	7.39	1	7.39	5.51	1.34
498	0	1059	7.59	1	7.59	5.29	1.43
499	0	1098	7.69	1	7.69	4.64	1.66
500	0	976	7.37	1	7.37	3.17	2.32
501	0	794	6.87	1	6.87	5.82	1.18
502	0	689	6.53	1	6.53	6.47	1.01
503	0	633	6.35	1	6.35	7.10	0.89
504	0	622	6.31	1	6.31	5.86	1.08
505	0	773	6.80	1	6.80	7.08	0.96
506	0	1176	7.90	1	7.90	7.56	1.04
507	0	1534	9.47	0	9.97	6.15	
508	0	1245	8.11	1	8.11	5.91	1.37
509	0	1076	7.63	1	7.63	4.81	1.59
510	0	1014	7.47	1	7.47	4.67	1.60
511	0	902	7.17	1	7.17	5.04	1.42
512	0	772	6.80	1	6.80	4.45	1.53
513	0	618	6.30	1	6.30	4.86	1.30
514	0	405	5.51	1	5.51	5.50	1.00
515	0	287	5.03	1	5.03	6.66	0.76
516	0	291	5.04	1	5.04	7.32	0.69
517	0	337	5.23	1	5.23	6.85	0.76
518	0	389	5.44	1	5.44	7.82	0.70
519	0	423	5.58	1	5.58	7.33	0.76
520	0	735	6.68	1	6.68	7.37	0.91
521	0	1082	7.65	1	7.65	6.85	1.12
522	0	1183	7.91	1	7.91	6.10	1.30
523	0	1122	7.75	1	7.75	5.86	1.32
524	0	1084	7.65	1	7.65	6.10	1.25
525	0	1019	7.48	1	7.48	6.00	1.25
526	0	884	7.13	1	7.13	5.88	1.21
527	0	787	6.84	1	6.84	5.79	1.18
528	0	744	6.71	1	6.71	5.91	1.14

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
529	0	721	6.63	1	6.63	5.64	1.18
530	0	678	6.49	1	6.49	5.86	1.11
531	0	632	6.34	1	6.34	5.52	1.15
532	0	722	6.64	1	6.64	7.39	0.90
533	0	1006	7.45	1	7.45	7.03	1.06
534	0	1340	8.47	1	8.47	5.47	1.55
535	0	1406	8.73	1	8.73	6.45	1.35
536	0	1251	8.13	1	8.13	6.42	1.27
537	0	1364	8.56	1	8.56	5.52	1.55
538	0	1375	8.61	1	8.61	5.30	1.63
539	0	1238	8.08	1	8.08	6.56	1.23
540	0	1172	7.89	1	7.89	7.05	1.12
541	0	1171	7.88	1	7.88	6.27	1.26
542	0	1043	7.55	1	7.55	5.46	1.38
543	0	857	7.06	1	7.06	5.33	1.32
544	0	718	6.62	1	6.62	5.40	1.23
545	0	625	6.32	1	6.32	5.00	1.26
546	0	520	5.97	1	5.97	4.37	1.37
547	0	409	5.53	1	5.53	3.85	1.43
548	0	394	5.46	1	5.46	3.57	1.53
549	0	430	5.61	1	5.61	3.36	1.67
550	0	474	5.79	1	5.79	3.76	1.54
551	0	490	5.85	1	5.85	5.04	1.16
552	0	553	6.09	1	6.09	6.75	0.90
553	0	731	6.66	1	6.66	8.16	0.82
554	0	768	6.78	1	6.78	7.06	0.96
555	0	665	6.45	1	6.45	6.05	1.07
556	0	831	6.99	1	6.99	6.08	1.15
557	0	1092	7.67	1	7.67	5.94	1.29
558	0	1081	7.65	1	7.65	6.09	1.25
559	0	981	7.38	1	7.38	5.47	1.35
560	0	802	6.89	1	6.89	4.97	1.39
561	0	622	6.31	1	6.31	4.98	1.27
562	0	515	5.96	1	5.96	5.04	1.18
563	0	468	5.76	1	5.76	5.37	1.07
564	0	474	5.79	1	5.79	4.89	1.18
565	0	426	5.59	1	5.59	4.77	1.17
566	0	237	4.76	1	4.76	5.15	0.93
567	0	252	4.85	1	4.85	4.89	0.99
568	0	398	5.48	1	5.48	5.23	1.05
569	0	547	6.07	1	6.07	5.02	1.21
570	0	734	6.67	1	6.67	6.08	1.10
571	0	816	6.94	1	6.94	6.00	1.16
572	0	802	6.89	1	6.89	7.06	0.98
573	0	730	6.66	1	6.66	6.88	0.97
574	0	736	6.68	1	6.68	5.78	1.15
575	0	739	6.69	1	6.69	5.93	1.13
576	0	647	6.39	1	6.39	5.87	1.09
577	0	553	6.09	1	6.09	5.49	1.11
578	0	513	5.95	1	5.95	4.20	1.42
579	0	560	6.11	1	6.11	4.91	1.24
580	0	633	6.35	1	6.35	4.90	1.29
581	0	767	6.78	1	6.78	6.97	0.97
582	0	889	7.14	1	7.14	6.98	1.02
583	0	914	7.21	1	7.21	7.56	0.95
584	0	869	7.09	1	7.09	6.54	1.08
585	0	753	6.73	1	6.73	6.04	1.12
586	0	622	6.31	1	6.31	5.11	1.23
587	0	550	6.08	1	6.08	3.95	1.54
588	0	515	5.96	1	5.96	5.15	1.16
589	0	514	5.95	1	5.95	6.57	0.91
590	0	533	6.02	1	6.02	7.50	0.80
591	0	611	6.28	1	6.28	6.48	0.97
592	0	694	6.54	1	6.54	6.41	1.02
593	0	657	6.43	1	6.43	6.73	0.95
594	0	552	6.09	1	6.09	6.76	0.90
595	0	476	5.80	1	5.80	6.39	0.91
596	0	452	5.70	1	5.70	5.94	0.96
597	0	468	5.77	1	5.77	5.68	1.01
598	0	514	5.95	1	5.95	5.85	1.02
599	0	551	6.08	1	6.08	5.81	1.05
600	0	658	6.43	1	6.43	6.38	1.01
601	0	783	6.83	1	6.83	6.33	1.08
602	0	784	6.83	1	6.83	6.58	1.04
603	0	726	6.65	1	6.65	5.84	1.14
604	0	737	6.68	1	6.68	5.29	1.26
605	0	778	6.82	1	6.82	4.46	1.53
606	0	707	6.59	1	6.59	4.97	1.33
607	0	651	6.40	1	6.40	4.99	1.28
608	0	736	6.68	1	6.68	6.69	1.00
609	0	887	7.14	1	7.14	5.36	1.33
610	0	938	7.27	1	7.27	5.66	1.28
611	0	929	7.25	1	7.25	6.67	1.09
612	0	906	7.19	1	7.19	6.65	1.08
613	0	863	7.07	1	7.07	7.30	0.97
614	0	863	7.07	1	7.07	6.72	1.05
615	0	927	7.24	1	7.24	7.64	0.95
616	0	898	7.17	1	7.17	7.09	1.01

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
617	0	760	6.76	1	6.76	6.90	0.98
618	0	641	6.37	1	6.37	6.78	0.94
619	0	615	6.29	1	6.29	6.87	0.92
620	0	676	6.49	1	6.49	6.41	1.01
621	1	777	6.81	1		8.04	
622	1	859	7.06	1		6.58	
623	1	927	7.24	1		7.37	
624	1	1052	7.57	1		7.26	
625	1	1125	7.76	1		6.54	
626	1	1016	7.47	1		5.40	
627	1	826	6.97	1		5.00	
628	1	661	6.44	1		5.16	
629	0	520	5.98	1	5.98	5.93	1.01
630	0	451	5.70	1	5.70	6.51	0.88
631	0	475	5.79	1	5.79	5.93	0.98
632	0	542	6.05	1	6.05	5.80	1.04
633	0	603	6.25	1	6.25	5.28	1.18
634	0	622	6.31	1	6.31	4.92	1.28
635	0	570	6.14	1	6.14	4.53	1.36
636	0	545	6.06	1	6.06	7.42	0.82
637	0	554	6.09	1	6.09	8.19	0.74
638	0	537	6.04	1	6.04	7.41	0.81
639	0	654	6.41	1	6.41	7.13	0.90
640	0	893	7.15	1	7.15	7.35	0.97
641	0	1011	7.46	1	7.46	6.39	1.17
642	0	1049	7.56	1	7.56	4.98	1.52
643	0	1036	7.53	1	7.53	5.26	1.43
644	0	940	7.28	1	7.28	5.70	1.28
645	0	818	6.95	1	6.95	6.30	1.10
646	0	730	6.66	1	6.66	6.65	1.00
647	0	691	6.53	1	6.53	7.08	0.92
648	0	728	6.65	1	6.65	6.85	0.97
649	0	742	6.70	1	6.70	6.48	1.03
650	0	711	6.60	1	6.60	5.76	1.15
651	0	711	6.60	1	6.60	5.53	1.19
652	0	652	6.41	1	6.41	4.56	1.40
653	0	587	6.20	1	6.20	4.44	1.40
654	0	606	6.26	1	6.26	4.17	1.50
655	0	547	6.07	1	6.07	3.55	1.71
656	0	497	5.88	1	5.88	3.90	1.51
657	0	600	6.24	1	6.24	4.72	1.32
658	0	630	6.34	1	6.34	6.34	1.00
659	0	536	6.03	1	6.03	6.67	0.90
660	0	457	5.72	1	5.72	7.44	0.77
661	0	511	5.94	1	5.94	6.99	0.85
662	0	649	6.40	1	6.40	6.91	0.93
663	0	700	6.56	1	6.56	5.92	1.11
664	0	714	6.61	1	6.61	5.21	1.27
665	0	691	6.53	1	6.53	4.08	1.60
666	0	622	6.31	1	6.31	4.79	1.32
667	0	539	6.04	1	6.04	5.33	1.13
668	0	496	5.88	1	5.88	5.81	1.01
669	0	567	6.13	1	6.13	5.02	1.22
670	0	649	6.40	1	6.40	4.87	1.31
671	0	653	6.41	1	6.41	7.20	0.89
672	0	619	6.30	1	6.30	7.90	0.80
673	0	546	6.07	1	6.07	8.08	0.75
674	0	435	5.63	1	5.63	7.31	0.77
675	0	380	5.40	1	5.40	6.17	0.88
676	0	403	5.50	1	5.50	5.50	1.00
677	0	475	5.79	1	5.79	5.25	1.10
678	0	588	6.20	1	6.20	6.38	0.97
679	0	712	6.60	1	6.60	6.53	1.01
680	0	713	6.60	1	6.60	5.92	1.12
681	0	604	6.25	1	6.25	5.94	1.05
682	0	512	5.94	1	5.94	6.08	0.98
683	0	445	5.67	1	5.67	5.54	1.02
684	0	333	5.21	1	5.21	6.19	0.84
685	0	309	5.12	1	5.12	5.96	0.86
686	0	336	5.23	1	5.23	4.97	1.05
687	0	361	5.33	1	5.33	5.39	0.99
688	0	369	5.36	1	5.36	5.90	0.91
689	0	407	5.52	1	5.52	5.60	0.99
690	0	481	5.82	1	5.82	4.82	1.21
691	0	527	6.00	1	6.00	5.06	1.19
692	0	487	5.84	1	5.84	4.70	1.24
693	0	443	5.66	1	5.66	5.08	1.12
694	0	400	5.49	1	5.49	5.16	1.06
695	0	322	5.17	1	5.17	5.32	0.97
696	0	233	4.74	1	4.74	5.81	0.82
697	0	212	4.63	1	4.63	6.18	0.75
698	0	202	4.57	1	4.57	5.81	0.79
699	0	300	5.08	1	5.08	5.10	1.00
700	0	275	4.97	1	4.97	5.99	0.83
701	0	169	4.40	1	4.40	6.58	0.67
702	0	193	4.52	1	4.52	5.76	0.79
703	0	343	5.26	1	5.26	4.22	1.24
704	0	402	5.50	1	5.50	4.18	1.32

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
705	0	451	5.69	1	5.69	3.83	1.49
706	1	426	5.59	1		3.74	
707	1	437	5.64	1		4.25	
708	1	496	5.88	1		3.52	
709	1	466	5.76	1		3.39	
710	1	382	5.41	1		3.39	
711	1	319	5.16	1		2.93	
712	1	273	4.96	1		3.13	
713	0	324	5.18	1	5.18	3.61	1.44
714	0	323	5.18	1	5.18	4.33	1.19
715	0	146	4.27	1	4.27	4.82	0.88
716	0	190	4.51	1	4.51	5.20	0.87
717	0	285	5.02	1	5.02	6.48	0.77
718	1	405	5.51	1		6.96	
719	1	505	5.92	1		7.00	
720	1	616	6.29	1		6.44	
721	1	747	6.72	1		5.81	
722	1	812	6.92	1		5.87	
723	1	761	6.76	1		5.83	
724	1	681	6.50	1		6.67	
725	1	628	6.33	1		6.43	
726	1	593	6.22	1		7.25	
727	1	572	6.15	1		7.84	
728	1	598	6.23	1		7.29	
729	1	677	6.49	1		6.40	
730	1	653	6.41	1		5.54	
731	0	573	6.15	1	6.15	5.45	1.13
732	0	560	6.11	1	6.11	4.92	1.24
733	0	539	6.04	1	6.04	4.81	1.26
734	0	447	5.68	1	5.68	4.65	1.22
735	0	354	5.30	1	5.30	4.89	1.08
736	0	397	5.48	1	5.48	4.25	1.29
737	0	503	5.91	1	5.91	4.27	1.38
738	0	656	6.42	1	6.42	5.26	1.22
739	0	672	6.47	1	6.47	5.14	1.26
740	0	584	6.19	1	6.19	5.55	1.11
741	0	455	5.71	1	5.71	5.87	0.97
742	0	386	5.43	1	5.43	6.38	0.85
743	0	403	5.50	1	5.50	6.47	0.85
744	0	428	5.60	1	5.60	6.62	0.85
745	0	483	5.82	1	5.82	6.84	0.85
746	0	544	6.06	1	6.06	6.29	0.96
747	0	575	6.16	1	6.16	5.52	1.12
748	0	639	6.36	1	6.36	4.69	1.36
749	0	663	6.44	1	6.44	4.28	1.51
750	0	569	6.14	1	6.14	4.37	1.40
751	0	428	5.60	1	5.60	4.37	1.28
752	0	315	5.14	1	5.14	3.52	1.46
753	0	304	5.10	1	5.10	3.72	1.37
754	0	312	5.13	1	5.13	2.90	1.77
755	0	215	4.64	1	4.64	2.63	1.77
756	0	116	4.10	1	4.10	2.28	1.80
757	0	102	4.03	1	4.03	2.94	1.37
758	0	100	4.02	1	4.02	2.52	1.59
759	0	100	4.02	1	4.02	2.99	1.34
760	0	100	4.02	1	4.02	5.00	0.80
761	0	100	4.02	1	4.02	6.31	0.64
762	0	100	4.02	1	4.02	6.32	0.64
763	0	103	4.03	1	4.03	7.64	0.53
764	0	272	4.96	1	4.96	7.57	0.65
765	0	501	5.90	1	5.90	7.14	0.83
766	0	745	6.71	1	6.71	7.19	0.93
767	0	923	7.23	1	7.23	6.77	1.07
768	0	1068	7.61	1	7.61	6.39	1.19
769	0	1170	7.88	1	7.88	6.22	1.27
770	0	1173	7.89	1	7.89	7.78	1.01
771	0	1179	7.90	1	7.90	7.69	1.03
772	0	1212	7.99	1	7.99	6.71	1.19
773	0	1100	7.69	1	7.69	5.44	1.41
774	0	995	7.42	1	7.42	4.92	1.51
775	0	1026	7.50	1	7.50	5.39	1.39
776	0	1060	7.59	1	7.59	7.03	1.08
777	0	1015	7.47	1	7.47	6.46	1.16
778	0	1013	7.47	1	7.47	6.12	1.22
779	0	1101	7.70	1	7.70	5.95	1.29
780	0	998	7.43	1	7.43	5.49	1.35
781	0	828	6.98	1	6.98	4.55	1.53
782	0	771	6.79	1	6.79	4.05	1.68
783	0	771	6.79	1	6.79	3.10	2.19
784	0	731	6.66	1	6.66	3.79	1.76
785	0	630	6.34	1	6.34	4.70	1.35
786	0	518	5.97	1	5.97	4.39	1.36
787	0	430	5.61	1	5.61	3.55	1.58
788	0	301	5.09	1	5.09	4.00	1.27
789	0	210	4.62	1	4.62	4.02	1.15
790	0	212	4.63	1	4.63	3.43	1.35
791	0	209	4.61	1	4.61	3.42	1.35
792	0	152	4.30	1	4.30	3.42	1.26

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
793	0	144	4.25	1	4.25	2.84	1.50
794	0	127	4.16	1	4.16	3.40	1.22
795	0	144	4.26	1	4.26	2.67	1.59
796	0	111	4.08	1	4.08	2.88	1.41
797	0	140	4.24	1	4.24	3.65	1.16
798	0	242	4.79	1	4.79	4.01	1.19
799	0	239	4.77	1	4.77	4.72	1.01
800	0	200	4.56	1	4.56	4.74	0.96
801	0	133	4.20	1	4.20	5.98	0.70
802	0	168	4.39	1	4.39	5.97	0.74
803	0	263	4.91	1	4.91	6.09	0.81
804	0	381	5.41	1	5.41	4.96	1.09
805	0	512	5.94	1	5.94	4.70	1.26
806	0	618	6.30	1	6.30	5.45	1.16
807	0	539	6.04	1	6.04	5.40	1.12
808	0	396	5.47	1	5.47	5.39	1.02
809	0	407	5.52	1	5.52	5.35	1.03
810	0	466	5.75	1	5.75	5.58	1.03
811	0	492	5.86	1	5.86	4.94	1.19
812	0	452	5.70	1	5.70	4.93	1.16
813	0	409	5.53	1	5.53	4.31	1.28
814	0	285	5.02	1	5.02	3.78	1.33
815	0	234	4.75	1	4.75	3.40	1.40
816	0	223	4.69	1	4.69	3.97	1.18
817	0	216	4.65	1	4.65	2.79	1.67
818	0	175	4.42	1	4.42	4.19	1.06
819	0	123	4.14	1	4.14	3.45	1.20
820	0	100	4.02	1	4.02	4.07	0.99
821	0	104	4.04	1	4.04	4.74	0.85
822	0	103	4.03	1	4.03	5.64	0.72
823	0	162	4.36	1	4.36	5.36	0.81
824	0	254	4.86	1	4.86	6.38	0.76
825	0	230	4.73	1	4.73	7.52	0.63
826	0	310	5.12	1	5.12	7.04	0.73
827	0	328	5.20	1	5.20	6.95	0.75
828	0	330	5.20	1	5.20	6.11	0.85
829	0	410	5.53	1	5.53	5.85	0.94
830	0	478	5.80	1	5.80	6.75	0.86
831	0	565	6.13	1	6.13	6.55	0.93
832	0	603	6.25	1	6.25	5.23	1.20
833	0	601	6.24	1	6.24	5.02	1.24
834	0	529	6.01	1	6.01	4.79	1.25
835	0	392	5.45	1	5.45	4.66	1.17
836	0	379	5.40	1	5.40	5.16	1.05
837	0	1632		0	9.57	10.21	
838	0	1671		0	9.26	10.21	
839	0	1590	9.94	0	9.50	8.80	
840	0	1627		0	9.91	8.77	
841	0	1616	10.81	0	9.54	8.73	
842	0	1649		0	10.69	7.25	
843	0	1617	10.85	0	11.50	7.20	
844	0	1603	10.26	0	10.89	6.94	
845	0	1628		0	10.39	6.71	
846	0	1618	10.91	0		6.63	
847	0	1623		0		7.08	
848	0	1481	9.02	1	9.02	7.64	1.18
849	0	1359	8.55	1	8.55	7.18	1.19
850	0	1337	8.46	1	8.46	7.83	1.08
851	0	1410	8.74	1	8.74	8.20	1.07
852	0	1472	8.98	1	8.98	8.24	1.09
853	0	1453	8.91	1	8.91	8.18	1.09
854	0	1343	8.48	1	8.48	8.06	1.05
855	0	1496	9.15	1	9.15	8.11	1.13
856	0	1452	8.90	1	8.90	8.89	1.00
857	0	1376	8.61	1	8.61	10.03	0.86
858	0	1425	8.80	1	8.80	10.23	0.86
859	0	1612	10.63	0		9.46	
860	0	1647		0	9.49	9.40	
861	0	1617	10.89	0	9.57	8.88	
862	0	1613	10.69	0		9.20	
863	0	1603	10.25	0	9.74	7.67	
864	0	1577	9.83	0		7.56	
865	0	1646		0	9.41	8.09	
866	0	1645		0	11.22	9.74	
867	0	1623		0		11.25	
868	0	1623		0	10.50	11.07	
869	0	1621		0	9.40	10.23	
870	0	1623		0	10.39	9.29	
871	0	1634		0	11.61	8.72	
872	0	1611	10.60	0	12.01	9.35	
873	0	1614	10.74	0	10.16	10.23	
874	0	1619	10.97	0		10.27	
875	0	1644		0	10.27	10.07	
876	0	1622		0	9.60	9.35	
877	0	1631		0	10.11	8.55	
878	0	1625		0	10.04	9.73	
879	0	1597	10.00	0	10.04	8.94	
880	0	1634		0	9.69	8.68	

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881	0	1616	10.81	0	9.89	8.66	
882	0	1633		0	9.62	8.49	
883	0	1623		0		8.29	
884	0	1632		0		7.11	
885	0	1641		0		7.52	
886	0	1649		0	10.19	7.53	
887	0	1617	10.88	0	11.13	10.05	
888	0	1612	10.67	0	10.29	9.96	
889	0	1628		0	10.78	10.56	
890	0	1624		0	11.76	9.71	
891	0	1618	10.92	0	10.41	9.69	
892	0	1619	10.95	0	10.63	9.81	
893	0	1624		0	10.25	9.46	
894	0	1631		0	9.28	8.73	
895	0	1634		0	9.55	9.50	
896	0	1622		0		8.76	
897	0	1621		0		8.53	
898	0	1598	10.03	0		7.73	
899	0	1633		0		8.78	
900	0	1630		0		8.57	
901	0	1652		0	9.89	7.38	
902	0	1619	10.96	0	10.39	6.90	
903	0	1632		0	9.70	7.10	
904	0	1613	10.70	0		7.79	
905	0	1615	10.77	0	9.26	7.42	
906	0	1652		0	11.41	8.20	
907	0	1586	9.91	0	9.74	7.47	
908	0	1610	10.56	0	9.27	8.60	
909	0	1551	9.61	0		7.67	
910	0	1341	8.48	1	8.48	6.94	1.22
911	0	1660		0	9.83	7.24	
912	0	1635		0	9.51	7.36	
913	0	1617	10.87	0		6.96	
914	0	1427	8.91	1	8.81	7.20	1.22
915	0	1093	7.68	1	7.68	7.24	1.06
916	0	972	7.36	1	7.36	7.31	1.01
917	0	946	7.29	1	7.29	6.84	1.07
918	0	1159	7.85	1	7.85	6.69	1.17
919	0	1631		0	9.82	9.59	
920	0	1642		0		10.99	
921	0	1644		0		9.72	
922	0	1615	10.77	0	10.17	9.41	
923	0	1604	10.31	0		9.14	
924	0	1645		0	10.11	9.09	
925	0	1620	10.98	0	10.56	8.97	
926	0	1608	10.50	0	9.82	9.06	
927	0	1610	10.57	0		9.38	
928	0	1633		0	9.48	8.06	
929	0	1647		0	9.70	8.91	
930	0	1621		0	9.76	10.26	
931	0	1624		0	9.93	10.92	
932	0	1601	10.17	0		10.46	
933	0	1600	10.13	0		8.63	
934	0	1612	10.65	0		8.18	
935	0	1671		0	10.70	8.56	
936	0	1672		0	10.42	11.37	
937	0	1617	10.85	0	9.49	10.94	
938	0	1608	10.47	0	9.94	10.90	
939	0	1622		0		10.61	
940	0	1622		0		10.10	
941	0	1636		0	10.45	10.16	
942	0	1622		0	10.90	10.16	
943	0	1617	10.87	0	11.00	9.71	
944	0	1620	10.98	0	10.28	10.08	
945	0	1642		0	10.27	8.73	
946	0	1622		0	11.48	8.81	
947	0	1623		0	12.49	8.62	
948	0	1621		0	11.78	9.57	
949	0	1614	10.74	0	9.86	10.32	
950	0	1619	10.98	0	9.33	9.62	
951	0	1641		0		10.11	
952	0	1629		0	9.91	10.14	
953	0	1608	10.47	0		10.45	
954	0	1646		0	9.89	10.42	
955	0	1626		0	10.12	9.27	
956	0	1631		0	11.13	10.42	
957	0	1610	10.58	0	10.52	9.28	
958	0	1618	10.90	0	9.67	10.21	
959	0	1642		0	11.00	10.65	
960	0	1631		0	12.08	10.66	
961	0	1624		0	11.35	10.05	
962	0	1621		0	12.31	10.48	
963	0	1619	10.96	0	11.08	10.52	
964	0	1630		0	10.89	10.17	
965	0	1625		0	10.08	10.85	
966	0	1623		0	12.05	9.90	
967	0	1630		0	10.46	9.44	
968	0	1623		0	11.63	10.88	

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
969	0	1628		0	11.62	11.05	
970	0	1623		0	11.82	10.09	
971	0	1626		0	10.72	9.89	
972	0	1631		0	11.51	8.69	
973	0	1620		0	11.46	9.53	
974	0	1627		0	11.17	9.58	
975	0	1625		0	10.10	8.30	
976	0	1628		0	11.34	8.16	
977	0	1625		0	10.84	8.39	
978	0	1626		0	10.62	9.60	
979	0	1627		0	10.89	10.68	
980	0	1627		0	11.64	11.33	
981	0	1622		0	11.52	11.01	
982	0	1621		0	11.86	9.59	
983	0	1630		0	10.51	10.36	
984	0	1628		0	11.58	10.51	
985	0	1624		0	11.82	10.18	
986	0	1624		0	10.90	10.88	
987	0	1631		0	10.41	9.75	
988	0	1625		0	10.72	8.47	
989	0	1623		0	10.49	9.55	
990	0	1623		0	10.33	9.00	
991	0	1630		0	11.29	9.61	
992	0	1619	10.95	0	11.57	8.99	
993	0	1624		0	9.80	8.00	
994	0	1625		0	10.42	8.33	
995	0	1613	10.71	0	9.84	8.70	
996	0	1637		0		9.60	
997	0	1630		0	9.50	9.99	
998	0	1650		0	9.73	9.92	
999	0	1624		0	11.26	9.35	
1000	0	1619	10.96	0	9.77	8.90	
1001	0	1624		0	10.60	9.61	
1002	0	1623		0	10.50	9.11	
1003	0	1624		0	10.95	8.79	
1004	0	1620		0	11.29	8.15	
1005	0	1612	10.64	0	10.15	7.92	
1006	0	1638		0	9.81	8.00	
1007	0	1618	10.90	0	9.95	9.00	
1008	0	1611	10.61	0		8.41	
1009	0	1649		0	9.75	7.86	
1010	0	1634		0	9.82	7.48	
1011	0	1625		0	10.02	8.67	
1012	0	1631		0	10.65	10.04	
1013	0	1624		0	10.87	9.78	
1014	0	1620		0	10.50	9.65	
1015	0	1625		0	10.38	9.71	
1016	0	1622		0	10.39	9.44	
1017	0	1624		0	10.76	8.80	
1018	0	1622		0	10.49	9.51	
1019	0	1621		0		9.01	
1020	0	1633		0	9.85	9.49	
1021	0	1620		0	9.59	10.21	
1022	0	1624		0	10.43	10.50	
1023	0	1623		0		9.82	
1024	0	1623		0		9.80	
1025	0	1643		0	9.92	9.69	
1026	0	1626		0	9.71	8.55	
1027	0	1611	10.63	0	9.85	8.17	
1028	0	1634		0	10.43	8.75	
1029	0	1633		0	9.52	9.47	
1030	0	1624		0	11.27	9.09	
1031	0	1619	10.95	0	10.58	8.91	
1032	0	1627		0	10.43	10.51	
1033	0	1610	10.58	0	9.96	10.44	
1034	0	1636		0	10.13	9.98	
1035	0	1617	10.86	0	10.78	7.24	
1036	1	1632		0		7.22	
1037	1	1628		0		6.64	
1038	1	1618	10.92	0		6.27	
1039	1	1614	10.73	0		7.09	
1040	1	1640		0		7.71	
1041	0	1626		0	9.38	9.50	
1042	0	1626		0	10.95	9.28	
1043	0	1620		0	11.74	9.56	
1044	0	1622		0	10.00	9.64	
1045	0	1629		0	10.00	8.93	
1046	0	1636		0	9.85	8.26	
1047	0	1625		0	10.31	7.73	
1048	0	1617	10.87	0	11.43	8.07	
1049	1	1619	10.97	0		8.96	
1050	1	1633		0		9.95	
1051	1	1631		0		9.64	
1052	1	1622		0		7.81	
1053	1	1626		0		7.83	
1054	1	1606	10.39	0		9.27	
1055	1	1634		0		8.76	
1056	1	1622		0		9.33	

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
1057	1	1622		0		10.24	
1058	1	1621		0		9.64	
1059	0	1638		0	10.08	9.12	
1060	0	1637		0	10.53	10.21	
1061	0	1615	10.77	0	10.07	9.78	
1062	0	1600	10.15	0		8.73	
1063	0	1630		0	9.78	8.41	
1064	0	1639		0		9.49	
1065	0	1649		0		8.49	
1066	0	1633		0		8.28	
1067	0	1615	10.79	0		7.90	
1068	0	1590	9.94	0		8.71	
1069	0	1607	10.45	0		9.19	
1070	0	1679		0	9.86	9.10	
1071	0	1654		0	10.47	8.62	
1072	0	1613	10.70	0	9.79	9.54	
1073	0	1606	10.37	0		11.01	
1074	0	1625		0	9.96	9.87	
1075	0	1625		0	9.92	7.94	
1076	0	1621		0	10.81	7.79	
1077	0	1621		0	10.90	7.91	
1078	0	1627		0	10.05	7.09	
1079	0	1627		0	10.13	8.37	
1080	0	1631		0	11.09	8.56	
1081	0	1618	10.90	0	10.47	7.69	
1082	0	1623		0	10.05	7.66	
1083	0	1629		0	9.49	7.98	
1084	0	1616	10.82	0	10.04	8.19	
1085	0	1632		0	10.01	8.04	
1086	0	1630		0	10.62	9.52	
1087	0	1622		0	9.62	10.14	
1088	0	1626		0	10.08	10.26	
1089	0	1619	10.98	0	10.61	11.19	
1090	0	1626		0	10.20	9.48	
1091	0	1629		0	10.14	8.76	
1092	0	1615	10.78	0	10.95	8.91	
1093	0	1619	10.98	0	9.82	9.35	
1094	0	1629		0	10.78	9.88	
1095	0	1623		0	10.05	9.79	
1096	0	1630		0	9.56	10.01	
1097	0	1627		0	9.78	8.85	
1098	0	1630		0	10.09	8.92	
1099	0	1613	10.69	0	9.98	8.74	
1100	0	1620		0		8.94	
1101	0	1634		0		8.81	
1102	0	1628		0	9.33	9.32	
1103	0	1631		0		9.08	
1104	0	1626		0		6.98	
1105	0	1641		0	9.63	7.75	
1106	0	1617	10.85	0	10.40	7.00	
1107	0	1614	10.76	0	10.03	7.41	
1108	0	1608	10.47	0	9.65	7.92	
1109	0	1632		0		8.10	
1110	0	1642		0	10.74	7.96	
1111	0	1628		0	10.72	7.28	
1112	0	1606	10.40	0	9.69	7.25	
1113	0	1623		0	9.61	7.58	
1114	0	1615	10.78	0	9.47	6.85	
1115	0	1628		0	10.36	7.43	
1116	0	1638		0	9.60	6.52	
1117	0	1626		0	9.64	6.68	
1118	0	1562	9.71	0		7.45	
1119	0	1537	9.50	0		6.75	
1120	0	1433	8.83	1	8.83	6.33	1.39
1121	0	1335	8.45	1	8.45	7.09	1.19
1122	0	1591	9.95	0		7.67	
1123	0	1463	8.94	1	8.94	7.69	1.16
1124	0	1527	9.41	0		8.46	
1125	0	1642		0		9.39	
1126	0	1598	10.06	0		9.00	
1127	0	1662		0		9.78	
1128	0	1609	10.52	0		9.45	
1129	0	1606	10.39	0		9.02	
1130	0	1607	10.42	0	9.84	9.12	
1131	0	1632		0	10.31	10.05	
1132	0	1628		0	10.08	10.84	
1133	0	1633		0	10.24	9.58	
1134	0	1630		0	11.29	9.38	
1135	0	1608	10.48	0	10.11	9.00	
1136	0	1623		0	11.44	8.65	
1137	0	1608	10.48	0	10.33	8.61	
1138	0	1604	10.30	0	9.58	8.03	
1139	0	1621		0		7.66	
1140	0	1629		0		6.88	
1141	0	1626		0		6.46	
1142	0	1677		0		8.97	
1143	0	1639		0	9.59	8.73	
1144	0	1646		0	9.43	10.03	

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
1145	0	1612	10.65	0	9.94	10.21	
1146	0	1609	10.50	0	9.84	9.92	
1147	0	1617	10.87	0	10.41	10.19	
1148	0	1615	10.80	0	11.09	9.62	
1149	0	1623		0	10.12	9.58	
1150	0	1619	10.95	0	9.71	9.21	
1151	0	1623		0	9.52	8.09	
1152	0	1625		0		7.63	
1153	0	1626		0		7.99	
1154	0	1637		0	9.56	9.86	
1155	0	1623		0		8.28	
1156	0	1636		0		7.18	
1157	0	1629		0	9.95	7.71	
1158	0	1623		0	9.43	8.14	
1159	0	1623		0	9.46	7.58	
1160	0	1620		0		7.64	
1161	0	1629		0	9.63	7.81	
1162	0	1619	10.96	0	10.45	7.60	
1163	0	1605	10.37	0		8.22	
1164	0	1625		0	9.34	7.58	
1165	0	1645		0	10.66	7.10	
1166	0	1585	9.90	0	9.53	6.26	
1167	0	1577	9.83	0		6.19	
1168	0	1536	9.49	0		7.22	
1169	0	1452	8.90	1	8.90	8.99	0.99
1170	0	1502	9.20	1	9.20	8.11	1.13
1171	0	1494	9.14	1	9.14	6.61	1.38
1172	0	1525	9.39	0		8.63	
1173	0	1470	8.97	1	8.97	7.18	1.25
1174	0	1552	9.62	0		7.12	
1175	0	1656		0	10.11	6.55	
1176	0	1590	9.94	0		6.80	
1177	0	1552	9.62	0		7.09	
1178	0	1383	8.64	1	8.64	7.77	1.11
1179	0	1251	8.13	1	8.13	8.03	1.01
1180	0	1186	7.92	1	7.92	8.00	0.99
1181	0	1181	7.91	1	7.91	7.04	1.12
1182	0	1154	7.84	1	7.84	6.71	1.17
1183	0	1317	8.39	1	8.39	6.23	1.35
1184	0	1309	8.35	1	8.35	6.48	1.29
1185	0	1294	8.30	1	8.30	7.00	1.19
1186	0	1398	8.70	1	8.70	6.60	1.32
1187	0	1361	8.55	1	8.55	6.62	1.29
1188	0	1531	9.44	0		7.95	
1189	0	1626		0		7.62	
1190	0	1656		0	9.51	6.93	
1191	0	1536	9.49	0		7.66	
1192	0	1575	9.81	0		7.54	
1193	0	1499	9.17	1	9.17	8.39	1.09
1194	0	1667		0		6.90	
1195	0	1634		0		7.28	
1196	0	1602	10.20	0		7.94	
1197	0	1431	8.82	1	8.82	8.49	1.04
1198	0	1336	8.46	1	8.46	7.57	1.12
1199	0	1322	8.40	1	8.40	8.10	1.04
1200	0	1172	7.88	1	7.88	7.93	0.99
1201	0	1218	8.01	1	8.01	7.61	1.05
1202	0	1634		0		7.49	
1203	0	1618	10.90	0	9.29	7.12	
1204	0	1605	10.34	0	10.09	7.09	
1205	0	1580	9.86	0		8.02	
1206	0	1638		0		9.27	
1207	0	1617	10.88	0		9.66	
1208	0	1587	9.91	0		9.52	
1209	0	1551	9.61	0		9.26	
1210	0	1622		0	10.39	9.01	
1211	0	1555	9.65	0		8.86	
1212	0	1619	10.94	0	9.40	8.07	
1213	0	1638		0	9.44	7.79	
1214	0	1625		0	10.20	7.57	
1215	0	1615	10.76	0	9.42	6.67	
1216							
1217							
1218							
1219							
1220							
1221							
1222							
1223							
1224							
1225							
1226							
1227							
1228							
1229							
1230							
1231							
1232							

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range V_{hh} (m/s)	10m Anemometer Wind Speed, V_{10m} (m/s)	V_{hh}/V_{10m}
1233							
1234							
1235							
1236							
1237							
1238							
1239							
1240							
1241							
1242							
1243							
1244							
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1317							
1318							
1319							
1320							

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Sample Calculation

Standardized Wind Speed Through Power Curve
Standardized Wind Speed with Nacelle Anemometer
[as per IEC 61400-11 Edition 3.0 Section 8.2.1.1 and Section 8.2.1.2]

SAMPLE CALCULATION

This calculation example demonstrates the calculation of standardized wind speed through power curve and the calculation of standardized wind speed with Nacelle anemometer as per IEC 61400-11 Edition 3.0 section 8.2.1.1 and section 8.2.1.2

Sample calculations have been based on measurement data collected and reported for Jericho Wind Farm (Report ID: 14662.00.T80.R5) for data points collected during Turbine ON measurements [Data point #1 and #97]

8.2.1.1 Determination of Wind Speed through power curve (m/s)

Step 1: Determine Acceptable Range of Power Curve
The power curve relates the power to the wind speed at hub height. The wind speed is determined from the measured electric power. Correlation between measured sound level and measured electric power is very high for the allowed intervals of the power curve, see Equation (3).
The intervals on the power curve that can be used are all intervals where no duplicated values exist and the slope of the power curve including the uncertainty is

$$(P_{k+1} - P_{tol}) - (P_k + P_{tol}) > 0 \qquad (3)$$

where
k is the wind speed bin number of the power curve;
P_k is the power curve value at wind bin k;
P_{tol} is the tolerance on the power reading, typical values for Ptol are 1 to 5% of maximum value

The Acceptable Range of the power curve based on the slope of the power curve is highlighted in table 1.

Step2: Determine Standardized Wind Speed from linear interpolation from power curve for Data Point # 1

Average Active Power measured for Data Point #1 (x) = 1037 kW

$$y = y_0 + (x - x_0)\frac{y_1 - y_0}{x_1 - x_0} = \frac{y_0(x_1 - x) + y_1(x - x_0)}{x_1 - x_0},$$

y_0 =	7	m/s
x_0 =	837	kW
y_1 =	8	m/s
x_1 =	1217	kW
x =	1037	kW
y =	7.53	m/s

8.2.1.2 Determination of Wind Speed with Nacelle Anemometer

For all data points with power levels from the allowed range of the power curve, the average value of the ratio of the wind speed derived from the power curve $V_{P,n}$ and the measured nacelle wind speed $V_{nac,m}$,k_{nac}, is derived. This value is applied to the measured nacelle wind speed for the data points with power levels outside the allowed range of the power curve to derive the normalised wind speed using Equation (4).

$$V_{nac,n} = \kappa_{nac} V_{nac,m} \qquad (4)$$

$V_{nac,m}$ is the wind speed measured with the nacelle anemometer;
$V_{nac,n}$ is the normalised wind speed from the nacelle anemometer, corrected to hub height

Determine Standardized Wind Speed using eq(4) for Data Point #97

K_{nac} =	1.0160	
$V_{nac,m}$ =	11.0050	m/s
$V_{nac,n}$ =	11.18	m/s

Table 1 - Power Curve and Acceptable Range of Power Curve

Power Curve Hub Wind Speed (m/s)	Power [kW]	+ value = acceptable slope of power curve
0	0	-32.4
1	0	-32.4
2	0	-28.4
3	4	60.6
4	97	150.6
5	280	214.6
6	527	277.6
7	837	347.6
8	1217	228.6
9	1478	86.6
10	1597	-9.4
11	1620	-32.4
12	1620	-32.4
13	1620	-32.4
14	1620	-32.4
15	1620	-32.4
16	1620	-32.4
17	1620	-32.4
18	1620	-32.4
19	1620	-32.4
20	1620	-32.4
21	1620	-32.4
22	1620	-32.4
23	1620	-32.4
24	1620	-32.4
25	1620	

Table 2 - Power Curve & Required Wind Speeds

Power Curve & Required Wind Speeds		
Power Curve Tolerance	1%	
Acceptable range min	3	m/s
Acceptable range max	9	m/s
Min allowable range	3	m/s
Max allowable range	9	m/s
Power Output	1620	kW
85% Power	1377	kW
Corresponding wind speed	8.61	m/s
Minimum bin	7.0	m/s
Maximum bin	11.0	m/s

Table 3 - Nacelle K-factor and Bacground K-factor

Environmental Details		
k_nac	1.0160	
k_Z	1.1507	

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Calibration Certificates

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

ACOUSTICAL CALIBRATOR

Manufactured by:	BRUEL & KJAER
Model No:	4231
Serial No:	2513182
Calibration Recall No:	27880

Submitted By:

Customer:

Company: Aercoustics Egineering LTD

Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 4231 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2008 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by: FC

Calibration Date: 25-Jul-17

Felix Christopher (QA Mgr.)

Certificate No: 27880 - 2

ISO/IEC 17025:2005

ACCREDITED

Calibration Lab. Cert. # 1533.01

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor NY 14564

ISO/IEC 17025: 2005
ACCREDITED
Calibration Lab. Cert. # 1533.01

REPORT OF CALIBRATION

for

Brüel & Kjær Acoustical Calibrator **Model No.: 4231** **Serial No.: 2513182**
Company: Aercoustics Engineering LTD **ID No.: XXXX**

Calibration results:

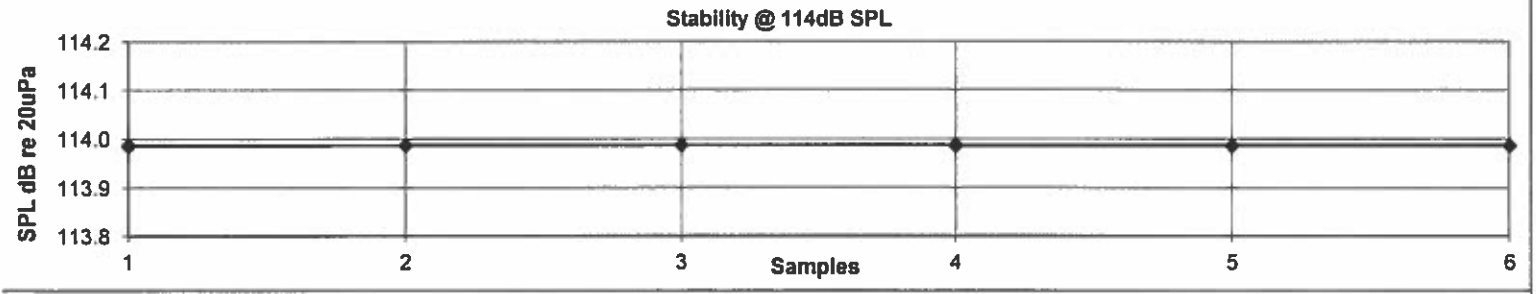
Before data: ..... **After data:** .....
Before & after data same: ...X...
Sound Pressure Level at 1000.0 Hz and pressure of 1013 hPa (mbar)
was 113.99 dB re 20µPa
(Calibrator tested with ½" adaptor UC 0210)
IEC 1094-4 Type WS 2 P Microphone was used for measurement.

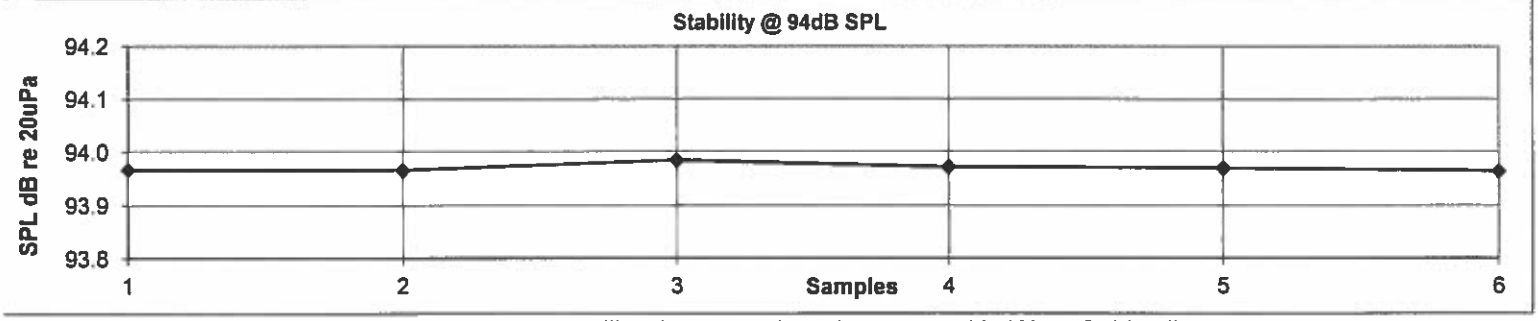
	114dB	94dB
Sound Pressure Level:	Pass	Pass
Frequency:	Pass	Pass
Distortion:	Pass	Pass
Stability:	Pass	Pass
All tested parameters:		Pass

Laboratory Environment:		
Ambient Temperature:	22.6	°C
Ambient Humidity:	54.8	% RH
Ambient Pressure:	99.611	kPa
Calibration Date:	25-Jul-2017	
Calibration Due:	25-Jul-2019	
Report Number:	27880 -2	
Control Number:	27880	

The above listed instrument meets or exceeds the tested manufacturer's specifications
The IEC 942:1988 Class 1 specifications, passed.
The ANSI S1.4-1984 specifications, passed.
This Calibration is traceable through NIST test numbers: 683/284413-14
The expanded uncertainty of calibration: 0.09dB at 95% confidence level with a coverage factor of k=2.

Graph represents six samples of Sound Pressure Level measured at 5sec. interval.





The above listed instrument was checked using calibration procedure documented in West Caldwell Calibration Laboratories Inc. procedure : **Rev. 7.0 Jan. 24, 2014 Doc. # 1038 4231B&K**

Calibration was performed by West Caldwell Calibration Laboratories Inc. under Operating Procedures intended to implement the requirements of ISO10012-1, IEC Guide 25, ANSI/NCSL Z540-1, (MIL-STD-45662A) and ISO 9001:2008, ISO 17025

Cal. Date: 25-Jul-2017

Measurements performed by: .....
James Zhu

Calibrated on WCCL system type 9700

West Caldwell Calibration Laboratories Inc.
1575 State Route 96, Victor NY 14564
Tel. (585) 586-3900 FAX (585) 586-4327

Calibration Data Record

for

Brüel & Kjær Acoustical Calibrator **Model No.: 4231** **Serial No.: 2513182**
Company: Aercoustics Engineering LTD

All tested parameters: Pass

Measured Sound Pressure Level (Six samples measured at 5 sec. interval)

Sample	1	113.99 dB re 20µPa		93.97 dB re 20µPa	
	2	113.99		93.97	
	3	113.99		93.98	
	4	113.99		93.97	
	5	113.99		93.97	
	6	113.99		93.96	
	Average	**113.99**	Spec. 114dB ± 0.2dB	**93.97**	Spec. 94dB ± 0.2dB

Frequency measured (Three samples at 30 sec. Interval)

Sample	1	999.98 Hz		1000.00 Hz	
	2	999.98		999.96	
	3	999.98		999.95	
	Average	**999.98**		**999.97**	Spec. 1000Hz ±0.1%

The Frequency expanded uncertainty of calibration:45µHz/Hz at 95% confidence level with a coverage factor of k=2.

Distortion measured	-49.9 dB		-46.6 dB	Spec. ≤-40dB

Instruments used for calibration:			Date of Cal.	Traceability No.	Re-cal. Due Date
Brüel & Kjær	4231	S/N 2205492	1-Nov-2016	683/284413-14	1-Nov-2017
Brüel & Kjær	4134	S/N 173494	1-Nov-2016	683/284413-14	1-Nov-2017
Brüel & Kjær	2669	S/N 1835080	1-Nov-2016	683/284413-14	1-Nov-2017
HP	34401A	S/N MY440029	1-Nov-2016	,287708	1-Nov-2017
Brüel & Kjær	2636	S/N 1487493	1-Nov-2016	683/284413-14	1-Nov-2017
HP	33120A	S/N SG400116	1-Nov-2016	,287708	1-Nov-2017

Cal. Date: 25-Jul-2017 **Tested by: James Zhu**

Calibrated on WCCL system type 9700

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MICROPHONE UNIT

Manufactured by:	BRUEL & KJAER
Model No:	4189-A-021
Serial No:	2622170
Calibration Recall No:	28047

Submitted By:

Customer:

Company: Aercoustics Engineering LTD

Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 4189-A-021 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2008 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by: FC

Calibration Date: 20-Sep-17

Felix Christopher (QA Mgr.)

Certificate No: 28047 - 1

ISO/IEC 17025:2005

ACCREDITED

Calibration Lab. Cert. # 1533.01

uncompromised calibration West Caldwell Calibration Laboratories, Inc.
1575 State Route 96, Victor, NY 14564, U.S.A.

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor NY 14564

ISO/IEC 17025: 2005
ACCREDITED
Calibration Lab. Cert. # 1533.01

REPORT OF CALIBRATION

for

Brüel & Kjær Microphone Unit

Model No.: 4189-A-021 — **Serial No.: 2622170**
Mic. Model No.: 4189 — **Serial No.: 2625197**
Preamp. Model No.: 2671 — **Serial No.: 2614901**
Company: Aercoustics Engineering LTD — **I. D. No.: XXXX**

Calibration results:

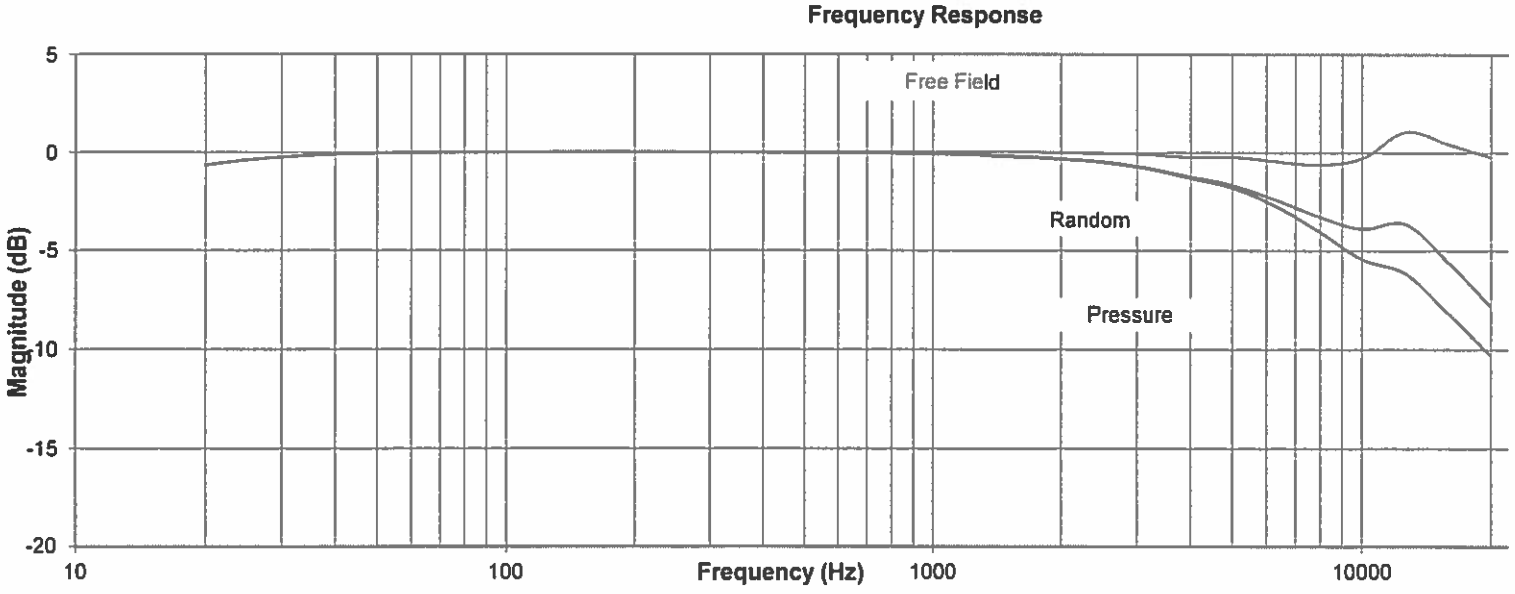
Before & after data same: ...X...

Combined Sensitivity @ **250** **Hz** **and pressure of** **99.456** **kPa**
(Sens. with mic. and preamp.) **0** Volts Polarization voltage (External):

-26.69 dB re.1V/Pascal
46.31 mV/Pascal
0.69 Ko (- dB re 50 mV/Pascal)
Sensitivity: **Pass**
Freq. Response: **Pass**
All tests: **Pass**

Ambient Temperature:	21.6	°C
Ambient Humidity:	53.6	% RH
Ambient Pressure:	99.456	kPa
Calibration Date:	20-Sep-2017	
Calibration Due:	20-Sep-2018	
Report Number:	28047	-1
Control Number:	28047	

The above listed instrument meets or exceeds the tested manufacturer's specifications.
The IEC 651:1979 & 1993 Type 1 specification passed.
This Calibration is traceable through NIST test numbers: 683/284413-14
The expanded uncertainty of calibration: 0.079dB at 95% confidence level with a coverage factor of k=2.
The pressure response recorded with electroacoustic method.



The above listed instrument was checked using calibration procedure documented in West Caldwell Calibration Laboratories Inc. procedure : **Rev. 7.0 Jan. 24, 2014 Doc. # 1038 P4189A021B&K**
Calibration was performed by West Caldwell Calibration Laboratories Inc. under Operating Procedures intended to implement the requirements of ISO10012-1, IEC Guide 25, ANSI/NCSL Z540-1, (MIL-STD-45662A) and ISO 9001:2008, ISO 17025

Measurements performed by: .....
James Zhu

Calibrated on WCCL system type 9700

West Caldwell Calibration Laboratories Inc.
1575 State Route 96, Victor NY 14564
Tel. (585) 586-3900 FAX (585) 586-4327

Calibration Data Record

for

Brüel & Kjær Microphone Unit **Model No.: 4189-A-021** **Serial No.: 2622170**
Company: Aercoustics Engineering LTD **I. D. No.: XXXX**

Frequency Response (Reference = 0 dB @ 250Hz)

Frequency [Hz]	Pressure [dB]	Free Field (dB)	Random (dB)
19.95	-0.65	-0.65	-0.65
25.12	-0.38	-0.38	-0.38
31.62	-0.21	-0.21	-0.21
39.81	-0.10	-0.10	-0.10
50.12	-0.04	-0.04	-0.04
63.10	-0.01	-0.01	-0.01
79.43	0.00	0.00	0.00
100.00	0.00	0.00	0.00
125.89	0.00	0.00	0.00
158.49	0.01	0.01	0.01
199.53	0.00	0.00	0.00
251.19	0.00	0.00	0.00
316.23	0.00	0.00	0.00
398.11	-0.01	0.00	-0.01
501.19	-0.01	0.01	-0.01
630.96	-0.02	0.02	-0.02
794.33	-0.04	0.03	-0.04
1000.00	-0.07	0.02	-0.09
1258.93	-0.11	0.04	-0.14
1584.89	-0.20	0.02	-0.25
1995.26	-0.33	-0.01	-0.34
2511.89	-0.51	-0.03	-0.47
3162.28	-0.81	-0.10	-0.77
3981.07	-1.30	-0.23	-1.21
5011.87	-1.80	-0.22	-1.66
6309.57	-2.72	-0.44	-2.41
7943.28	-4.00	-0.62	-3.25
10000.00	-5.41	-0.28	-3.87
12589.25	-6.14	1.05	-3.63
15848.93	-8.16	0.43	-5.57
19952.62	-10.27	-0.22	-7.79

Freq. response: Expanded Uncertainty (dB) with coverage factor K = 2
20 to 63Hz 0.1dB, 63 to 12.5kHz 0.094dB, 12.5k to 16kHz 0.10dB, 16k to 20kHz 0.5dB.

Instruments used for calibration:			Date of Cal.	Traceability No.	Re-cal. Due Date
Brüel & Kjær	4226	S/N 1445428	3-Nov-2016	683/284413-14	3-Nov-2017
Brüel & Kjær	3560	S/N 2202374	3-Nov-2016	683/284413-14	3-Nov-2017
HP	33120A	S/N 36043716	1-Oct-2016	,287708	1-Oct-2017
HP	34401A	S/N 36064102	1-Oct-2016	,287708	1-Oct-2017

Cal. Date: 20-Sep-2017 **Tested by: James Zhu**

Calibrated on WCCL system type 9700

SOH Wind Engineering LLC
141 Leroy Road · Williston, VT 05495 · USA
Tel 802.316.4368 · Fax 802.735.9106 · www.sohwind.com

CERTIFICATE FOR CALIBRATION OF SONIC ANEMOMETER

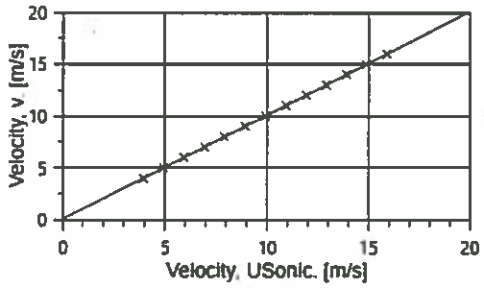
Certificate number: 17.US1.10370 **Date of issue:** November 16, 2017
Type: Vaisala Weather Transmitter, WXT520 **Serial number:** G4420002
Manufacturer: Vaisala, Oyj, Pl 26, FIN-00421 Helsinki, Finland
Client: Aercoustics Engineering Ltd., 1004 Middlegate RD, Suite 1100, S.Tower, Mississauga, ON L4Y 1M4, Canada

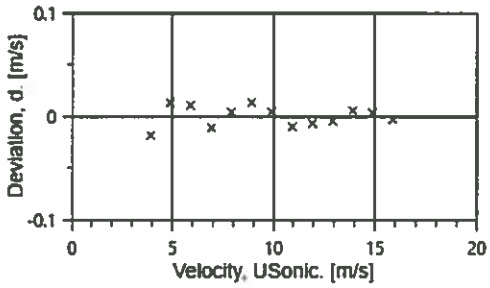
Anemometer received: November 15, 2017 **Anemometer calibrated:** November 15, 2017
Calibrated by: MEJ **Procedure:** MEASNET, IEC 61400-12-1:2017 Annex F
Certificate prepared by: EJF **Approved by:** Calibration engineer, EJF

Calibration equation obtained: $v\,[m/s] = 1.00118 \cdot f\,[m/s] + 0.06286$

Standard uncertainty, slope: 0.00077 **Standard uncertainty, offset:** 0.13048
Covariance: -0.0000059 $(m/s)^2/m/s$ **Coefficient of correlation:** $\rho = 0.999997$
Absolute maximum deviation: -0.019 m/s at 3.969 m/s
Barometric pressure: 1011.5 hPa **Relative humidity:** 21.9%

Succession	Velocity pressure, q. [Pa]	Temperature in wind tunnel [°C]	Temperature in d.p. box [°C]	Wind velocity, v. [m/s]	Anemometer Output, f. [m/s]	Deviation, d. [m/s]	Uncertainty u_c (k=2) [m/s]
2	9.39	22.0	26.0	3.969	3.9200	-0.019	0.024
4	14.85	22.0	26.0	4.992	4.9103	0.013	0.025
6	21.38	22.0	26.0	5.990	5.9100	0.011	0.027
8	29.13	22.1	26.0	6.993	6.9333	-0.011	0.029
10	38.09	22.1	26.0	7.996	7.9200	0.004	0.032
12	48.35	22.1	26.0	9.010	8.9233	0.013	0.035
13-last	59.50	22.1	26.0	9.996	9.9172	0.004	0.038
11	72.14	22.0	26.0	11.006	10.9400	-0.010	0.041
9	85.76	22.0	26.0	12.000	11.9300	-0.007	0.044
7	100.55	22.0	26.0	12.993	12.9200	-0.005	0.047
5	116.73	22.0	26.0	14.000	13.9150	0.006	0.050
3	133.56	22.0	26.0	14.974	14.8900	0.004	0.053
1-first	152.12	21.9	26.0	15.979	15.9000	-0.003	0.057





AC-1746

EQUIPMENT USED

Serial Number	Description
Njord1	Wind tunnel, blockage factor = 1.0035
2254	Control cup anemometer
-	Mounting tube, D = 19 mm
TT003	Summit Electronics, 1XPT100, 0-10V Output, wind tunnel temp.
TP001	PR Electronics 5102, 0-10V Output, differential pressure box temp.
DP004	Setra Model 239, 0-1inWC, differential pressure transducer
HY002	Dwyer RHP-2D20, 0-10V Output, humidity transmitter
BP001	Setra Model 278, barometer
PL8	Pitot tube
XB002	Computer Board. 16 bit A/D data acquisition board
9PRZRW1	PC dedicated to data acquisition

Traceable calibrations of the equipment are carried out by external accredited institutions: Atlantic Scale, Essco Calibration Labs & Furness Controls. A real-time analysis module within the data acquisition software detects pulse frequency.

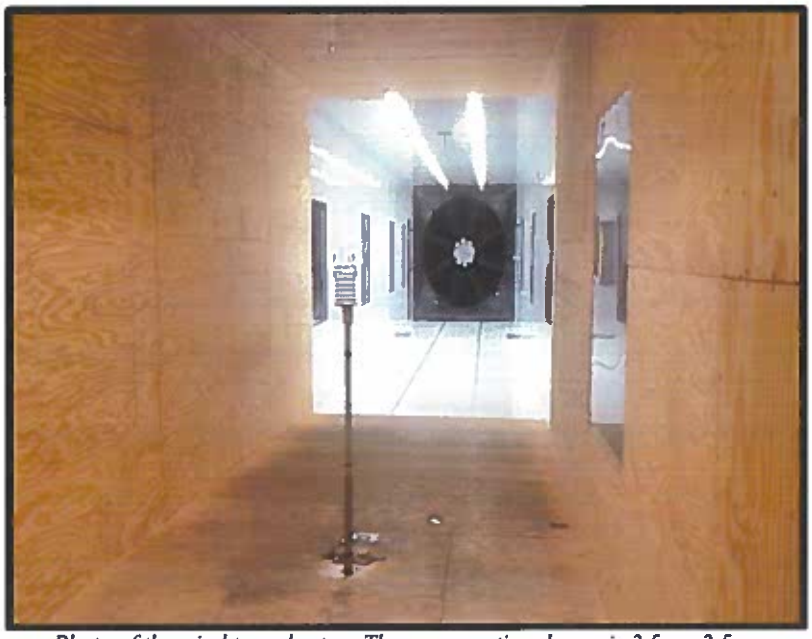


Photo of the wind tunnel setup. The cross-sectional area is 2.5m x 2.5m.

UNCERTAINTIES

The documented uncertainty is the total combined uncertainty at 95% confidence level (k=2) in accordance with EA-4/02. The uncertainty at 10 m/s comply with the requirements in the IEC 61400-12-1:2005 procedure. See Document US.12.01.004 for further details.

COMMENTS

This sensor was calibrated at 0° for this certificate.

Certificate number: 17.US1.10370

SOH Wind Engineering LLC
141 Leroy Road · Williston, VT 05495 · USA
Tel 802.316.4368 · Fax 802.735.9106 · www.sohwind.com

CERTIFICATE FOR CALIBRATION OF SONIC ANEMOMETER

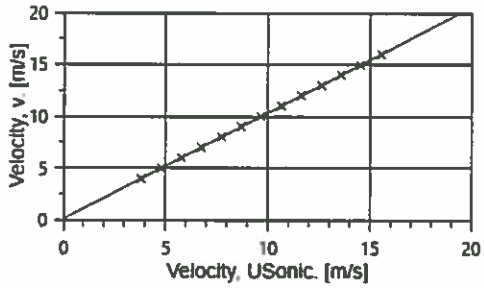
Certificate number: 17.US1.10369 **Date of issue:** November 16, 2017
Type: Vaisala Weather Transmitter, WXT520 **Serial number:** G4420002
Manufacturer: Vaisala, Oyj, Pl 26, FIN-00421 Helsinki, Finland
Client: Aercoustics Engineering Ltd., 1004 Middlegate RD, Suite 1100, S.Tower, Mississauga, ON L4Y 1M4, Canada

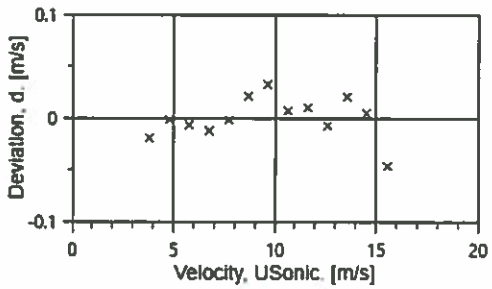
Anemometer received: November 15, 2017 **Anemometer calibrated:** November 15, 2017
Calibrated by: MEJ **Procedure:** MEASNET, IEC 61400-12-1:2017 Annex F
Certificate prepared by: EJF **Approved by:** Calibration engineer, EJF

Calibration equation obtained: v [m/s] = 1.02399 · f [m/s] + 0.09265

Standard uncertainty, slope: 0.00156 **Standard uncertainty, offset:** 0.17838
Covariance: -0.0000247 (m/s)²/m/s **Coefficient of correlation:** ρ = 0.999987
Absolute maximum deviation: -0.046 m/s at 15.979 m/s
Barometric pressure: 1011.1 hPa **Relative humidity:** 22.0%

Succession	Velocity pressure, q. [Pa]	Temperature in wind tunnel [°C]	d.p. box [°C]	Wind velocity, v. [m/s]	Anemometer Output, f. [m/s]	Deviation, d. [m/s]	Uncertainty u_c (k=2) [m/s]
2	9.41	22.0	26.0	3.975	3.8100	-0.019	0.024
4	14.86	22.0	26.0	4.996	4.7897	-0.002	0.025
6	21.40	22.1	26.0	5.994	5.7700	-0.007	0.027
8	29.14	22.1	26.0	6.996	6.7533	-0.012	0.029
10	38.16	22.1	26.0	8.006	7.7300	-0.002	0.032
12	48.35	22.1	26.0	9.012	8.6900	0.021	0.035
13-last	59.54	22.1	26.0	10.001	9.6448	0.032	0.038
11	72.13	22.1	26.0	11.009	10.6533	0.007	0.041
9	85.87	22.1	26.0	12.012	11.6300	0.010	0.044
7	100.56	22.1	26.0	12.998	12.6100	-0.008	0.047
5	116.94	22.0	26.0	14.015	13.5767	0.020	0.050
3	133.53	22.0	26.0	14.976	14.5300	0.005	0.053
1-first	152.03	22.0	26.0	15.979	15.5600	-0.046	0.057





AC-1746

EQUIPMENT USED

Serial Number	Description
Njord1	Wind tunnel, blockage factor = 1.0035
2254	Control cup anemometer
-	Mounting tube, D = 19 mm
TT003	Summit Electronics, 1XPT100, 0-10V Output, wind tunnel temp.
TP001	PR Electronics 5102, 0-10V Output, differential pressure box temp.
DP004	Setra Model 239, 0-1inWC, differential pressure transducer
HY002	Dwyer RHP-2D20, 0-10V Output, humidity transmitter
BP001	Setra Model 278, barometer
PL8	Pitot tube
XB002	Computer Board. 16 bit A/D data acquisition board
9PRZRW1	PC dedicated to data acquisition

Traceable calibrations of the equipment are carried out by external accredited institutions: Atlantic Scale, Essco Calibration Labs & Furness Controls. A real-time analysis module within the data acquisition software detects pulse frequency.

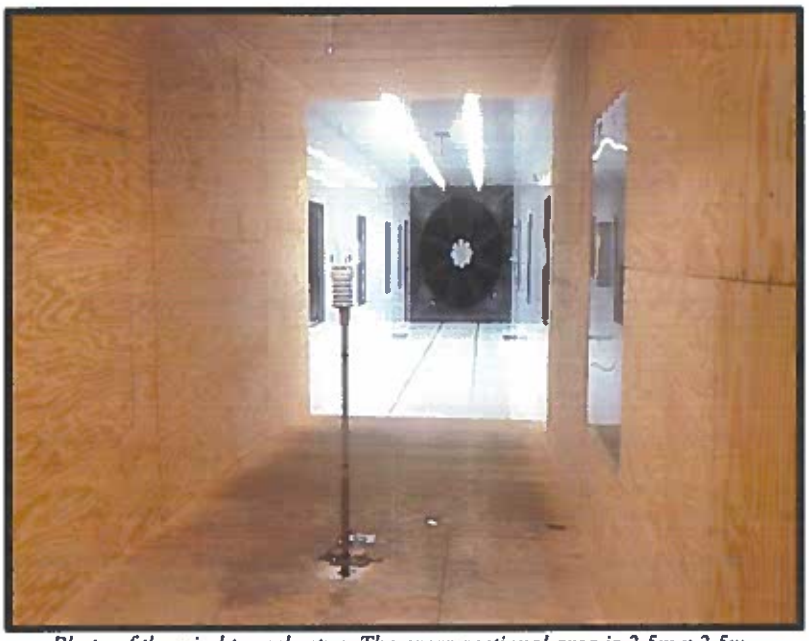


Photo of the wind tunnel setup. The cross-sectional area is 2.5m x 2.5m.

UNCERTAINTIES

The documented uncertainty is the total combined uncertainty at 95% confidence level (k=2) in accordance with EA-4/02. The uncertainty at 10 m/s comply with the requirements in the IEC 61400-12-1:2005 procedure. See Document US.12.01.004 for further details.

COMMENTS

This sensor was calibrated at 90° for this certificate.

Certificate number: 17.US1.10369

TRANSCAT CANADA
Trust in every measure

CERTIFICATE OF CALIBRATION

Customer: AEROCOUSTICS ENGINEERING LTD
1004 MIDDLEGATE ROAD
SUITE 1100
MISSISSAUGA, ON L4Y 1M4
PO Number: TR2018.02.14

SCC Accredited LAB — LAB Accrédité CCN
SCC Lab No 827

CLAS NRC·CNRC CLAS CLAS 2016-02

ilac-MRA

Certificate/SO Number: 33-Q0W0C-20-1 Revision 0

Manufacturer: Nokeval
Model Number: 7470
Description: Serial to Analog Converter
Serial Number: A159784
ID: NONE

As-Found: In Tolerance
As-Left: In Tolerance

Calibration Date: Feb 20, 2018
Due Date: Feb 20, 2020

Calibrated To: Manufacturer Specification
Calibration Procedure: 1-AC58014-0

Transcat Calibration Laboratories have been audited and found in compliance with ISO/IEC 17025:2005. Accredited calibrations performed within the Lab's Scope of Accreditation are indicated by the presence of the Accrediting Body's Logo and Certificate Number. Any measurements on an accredited calibration not covered by that Lab's Scope of Accreditation are listed in the notes section of the certificate. SCC, NRC, CLAS or ANAB do not guarantee the accuracy of an individual calibration by accredited laboratories.

Transcat calibrations, as applicable, are performed in compliance with the requirements of the Transcat Quality Manual QAC-P01-000 Revision 1.0, the customer's Purchase Order and/or Quality Agreement requirements, ISO 9001:2008, ANSI/NCSL Z540.1-1994 (R2002). Complete records of work performed are maintained by Transcat and are available for inspection. Laboratory standards used in the performance of this calibration are listed below.

Transcat documents the traceability of measurements to the SI units through the National Institute of Standards and Technology (NIST), or the National Research Council of Canada (NRC), or other national measurement institutes (NMI) that are signatories to the CIPM Mutual Recognition Arrangement, or accepted fundamental and/or natural physical constants, or by the use of specified methods, consensus standards or ratio type measurements. Documentation supporting traceability information is available for review upon written request at a Transcat facility. The measured quantity and the measurement uncertainty are required for further dissemination of traceability.

Uncertainties are reported with a coverage factor k=2, providing a level of confidence of approximately 95%. All calibrations have been performed using processes having a TUR of 4:1 or better (3:1 for mass calibrations), unless otherwise noted. The Test Uncertainty Ratio (TUR) is calculated in accordance with NCSL International RP-18. For mass calibrations: Conventional mass referenced to 8.0 g/cm³.

The results in this report relate only to the item calibrated or tested. Recorded calibration data is valid at the time of calibration within the stated uncertainties at the environmental conditions noted. The determination of compliance to the specification is specific to the model/serial no./ID no. referenced above based on the tolerances shown; these tolerances are either the original equipment manufacturers (OEM's) warranted specifications or the client's requested specifications. This certificate may not be reproduced except in full, without the written approval of Transcat. Additional information, if applicable may be included on separate report(s).

TRANSCAT CANADA
Trust in every measure

CERTIFICATE OF CALIBRATION

Customer: AEROCOUSTICS ENGINEERING LTD
1004 MIDDLEGATE ROAD
SUITE 1100
MISSISSAUGA, ON L4Y 1M4
PO Number: TR2018.02.14

SCC Accredited LAB
LAB Accrédité CCN
SCC Lab No 827

CLAS
NRC·CNRC
CLAS
CLAS 2016-02

ilac-MRA

Certificate/SO Number: 33-Q0W0C-20-1 Revision 0

As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Current % Source - 4-20mA Ch #1										
4 - 20mA	0%	±(0.1% Span)	3.984	4.016	3.996 mA		1.6e-004	1.9e-003	mA	100.0 : 1
	25%	±(0.1% Span)	7.984	8.016	7.995 mA		2.7e-004	1.9e-003	mA	59.3 : 1
	50%	±(0.1% Span)	11.984	12.016	12.000 mA		1.1e-003	2.2e-003	mA	14.5 : 1
	75%	±(0.1% Span)	15.984	16.016	15.999 mA		1.3e-003	2.3e-003	mA	12.3 : 1
	100%	±(0.1% Span)	19.984	20.016	19.998 mA		1.4e-003	2.3e-003	mA	11.4 : 1
DC Current % Source - 4-20mA Ch #2										
4 - 20mA	0%	±(0.1% Span)	3.984	4.016	3.996 mA		1.6e-004	1.9e-003	mA	100.0 : 1
	25%	±(0.1% Span)	7.984	8.016	7.999 mA		2.7e-004	1.9e-003	mA	59.3 : 1
	50%	±(0.1% Span)	11.984	12.016	11.997 mA		1.1e-003	2.2e-003	mA	14.5 : 1
	75%	±(0.1% Span)	15.984	16.016	16.002 mA		1.3e-003	2.3e-003	mA	12.3 : 1
	100%	±(0.1% Span)	19.984	20.016	19.999 mA		1.4e-003	2.3e-003	mA	11.4 : 1
DC Current % Source - 4-20mA Ch #3										
4 - 20mA	0%	±(0.1% Span)	3.984	4.016	3.996 mA		1.6e-004	1.9e-003	mA	100.0 : 1
	25%	±(0.1% Span)	7.984	8.016	7.996 mA		2.7e-004	1.9e-003	mA	59.3 : 1
	50%	±(0.1% Span)	11.984	12.016	11.996 mA		1.1e-003	2.2e-003	mA	14.5 : 1
	75%	±(0.1% Span)	15.984	16.016	16.002 mA		1.3e-003	2.3e-003	mA	12.3 : 1
	100%	±(0.1% Span)	19.984	20.016	20.002 mA		1.4e-003	2.3e-003	mA	11.4 : 1
DC Current % Source - 4-20mA Ch #4										
4 - 20mA	0%	±(0.1% Span)	3.984	4.016	3.997 mA		1.6e-004	1.9e-003	mA	100.0 : 1
	25%	±(0.1% Span)	7.984	8.016	7.995 mA		2.7e-004	1.9e-003	mA	59.3 : 1
	50%	±(0.1% Span)	11.984	12.016	11.999 mA		1.1e-003	2.2e-003	mA	14.5 : 1
	75%	±(0.1% Span)	15.984	16.016	15.997 mA		1.3e-003	2.3e-003	mA	12.3 : 1
	100%	±(0.1% Span)	19.984	20.016	20.001 mA		1.4e-003	2.3e-003	mA	11.4 : 1

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CERTIFICATE OF CALIBRATION

Customer: AEROCOUSTICS ENGINEERING LTD
1004 MIDDLEGATE ROAD
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MISSISSAUGA, ON L4Y 1M4
PO Number: TR2018.02.14

SCC Accredited LAB — LAB Accrédité CCN
SCC Lab No 827

CLAS ARC·CNRC CLAS CLAS 2016-02

ilac-MRA

Certificate/SO Number: 33-Q0W0C-20-1 Revision 0

As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Current % Source - 0-20mA Ch #1										
0 - 20mA	0%	±(0.1% Span)	-0.020	0.020	0.000 mA		9.2e-007	2.3e-003	mA	100.0 : 1
	25%	±(0.1% Span)	4.980	5.020	4.997 mA		1.9e-004	2.3e-003	mA	100.0 : 1
	50%	±(0.1% Span)	9.980	10.020	9.997 mA		3.2e-004	2.3e-003	mA	62.5 : 1
	75%	±(0.1% Span)	14.980	15.020	14.998 mA		1.2e-003	2.6e-003	mA	16.7 : 1
	100%	±(0.1% Span)	19.980	20.020	19.998 mA		1.4e-003	2.7e-003	mA	14.3 : 1
DC Current % Source - 0-20mA Ch #2										
0 - 20mA	0%	±(0.1% Span)	-0.020	0.020	0.002 mA		9.2e-007	2.3e-003	mA	100.0 : 1
	25%	±(0.1% Span)	4.980	5.020	4.996 mA		1.9e-004	2.3e-003	mA	100.0 : 1
	50%	±(0.1% Span)	9.980	10.020	10.000 mA		3.2e-004	2.3e-003	mA	62.5 : 1
	75%	±(0.1% Span)	14.980	15.020	15.000 mA		1.2e-003	2.6e-003	mA	16.7 : 1
	100%	±(0.1% Span)	19.980	20.020	19.999 mA		1.4e-003	2.7e-003	mA	14.3 : 1
DC Current % Source - 0-20mA Ch #3										
0 - 20mA	0%	±(0.1% Span)	-0.020	0.020	0.001 mA		9.2e-007	2.3e-003	mA	100.0 : 1
	25%	±(0.1% Span)	4.980	5.020	4.996 mA		1.9e-004	2.3e-003	mA	100.0 : 1
	50%	±(0.1% Span)	9.980	10.020	9.996 mA		3.2e-004	2.3e-003	mA	62.5 : 1
	75%	±(0.1% Span)	14.980	15.020	14.996 mA		1.2e-003	2.6e-003	mA	16.7 : 1
	100%	±(0.1% Span)	19.980	20.020	20.001 mA		1.4e-003	2.7e-003	mA	14.3 : 1
DC Current % Source - 0-20mA Ch #4										
0 - 20mA	0%	±(0.1% Span)	-0.020	0.020	0.001 mA		9.2e-007	2.3e-003	mA	100.0 : 1
	25%	±(0.1% Span)	4.980	5.020	4.992 mA		1.9e-004	2.3e-003	mA	100.0 : 1
	50%	±(0.1% Span)	9.980	10.020	9.997 mA		3.2e-004	2.3e-003	mA	62.5 : 1
	75%	±(0.1% Span)	14.980	15.020	14.996 mA		1.2e-003	2.6e-003	mA	16.7 : 1
	100%	±(0.1% Span)	19.980	20.020	20.001 mA		1.4e-003	2.7e-003	mA	14.3 : 1

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As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Voltage % Source - 0-5V Ch#1										
0 -5V	0%	±(0.1% Span)	-0.0050	0.0050	0.0009 V		5.0e-007	5.8e-004	V	100.0 : 1
	20%	±(0.1% Span)	0.9950	1.0050	1.0010 V		5.5e-006	5.8e-004	V	100.0 : 1
	40%	±(0.1% Span)	1.9950	2.0050	2.0001 V		1.1e-005	5.8e-004	V	100.0 : 1
	60%	±(0.1% Span)	2.9950	3.0050	2.9984 V		1.6e-005	5.8e-004	V	100.0 : 1
	80%	±(0.1% Span)	3.9950	4.0050	4.0001 V		2.1e-005	5.8e-004	V	100.0 : 1
	100%	±(0.1% Span)	4.9950	5.0050	4.9988 V		2.6e-005	5.8e-004	V	100.0 : 1
DC Voltage % Source - 0-5V Ch#2										
0 -5V	0%	±(0.1% Span)	-0.0050	0.0050	0.0002 V		5.0e-007	5.8e-004	V	100.0 : 1
	20%	±(0.1% Span)	0.9950	1.0050	1.0000 V		5.5e-006	5.8e-004	V	100.0 : 1
	40%	±(0.1% Span)	1.9950	2.0050	2.0010 V		1.1e-005	5.8e-004	V	100.0 : 1
	60%	±(0.1% Span)	2.9950	3.0050	2.9990 V		1.6e-005	5.8e-004	V	100.0 : 1
	80%	±(0.1% Span)	3.9950	4.0050	3.9980 V		2.1e-005	5.8e-004	V	100.0 : 1
	100%	±(0.1% Span)	4.9950	5.0050	5.0000 V		2.6e-005	5.8e-004	V	100.0 : 1
DC Voltage % Source - 0-5V Ch#3										
0 -5V	0%	±(0.1% Span)	-0.0050	0.0050	0.0001 V		5.0e-007	5.8e-004	V	100.0 : 1
	20%	±(0.1% Span)	0.9950	1.0050	0.9995 V		5.5e-006	5.8e-004	V	100.0 : 1
	40%	±(0.1% Span)	1.9950	2.0050	1.9991 V		1.1e-005	5.8e-004	V	100.0 : 1
	60%	±(0.1% Span)	2.9950	3.0050	2.9982 V		1.6e-005	5.8e-004	V	100.0 : 1
	80%	±(0.1% Span)	3.9950	4.0050	4.0008 V		2.1e-005	5.8e-004	V	100.0 : 1
	100%	±(0.1% Span)	4.9950	5.0050	5.0015 V		2.6e-005	5.8e-004	V	100.0 : 1

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As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Voltage % Source - 0-5V Ch#4										
0 -5V	0%	±(0.1% Span)	-0.0050	0.0050	0.0001 V		5.0e-007	5.8e-004	V	100.0 : 1
	20%	±(0.1% Span)	0.9950	1.0050	1.0006 V		5.5e-006	5.8e-004	V	100.0 : 1
	40%	±(0.1% Span)	1.9950	2.0050	1.9991 V		1.1e-005	5.8e-004	V	100.0 : 1
	60%	±(0.1% Span)	2.9950	3.0050	2.9999 V		1.6e-005	5.8e-004	V	100.0 : 1
	80%	±(0.1% Span)	3.9950	4.0050	3.9984 V		2.1e-005	5.8e-004	V	100.0 : 1
	100%	±(0.1% Span)	4.9950	5.0050	4.9996 V		2.6e-005	5.8e-004	V	100.0 : 1
DC Voltage % Source - 0-10V Ch#1										
0 - 10V	0%	±(0.1% Span)	-0.010	0.010	0.001 V		5.0e-007	1.2e-003	V	100.0 : 1
	20%	±(0.1% Span)	1.990	2.010	2.000 V		1.1e-005	1.2e-003	V	100.0 : 1
	40%	±(0.1% Span)	3.990	4.010	4.000 V		2.1e-005	1.2e-003	V	100.0 : 1
	60%	±(0.1% Span)	5.990	6.010	6.000 V		3.1e-005	1.2e-003	V	100.0 : 1
	80%	±(0.1% Span)	7.990	8.010	7.997 V		4.1e-005	1.2e-003	V	100.0 : 1
	100%	±(0.1% Span)	9.990	10.010	9.997 V		5.2e-005	1.2e-003	V	100.0 : 1
DC Voltage % Source - 0-10V Ch#2										
0 - 10V	0%	±(0.1% Span)	-0.010	0.010	0.002 V		5.0e-007	1.2e-003	V	100.0 : 1
	20%	±(0.1% Span)	1.990	2.010	2.001 V		1.1e-005	1.2e-003	V	100.0 : 1
	40%	±(0.1% Span)	3.990	4.010	3.998 V		2.1e-005	1.2e-003	V	100.0 : 1
	60%	±(0.1% Span)	5.990	6.010	5.998 V		3.1e-005	1.2e-003	V	100.0 : 1
	80%	±(0.1% Span)	7.990	8.010	7.998 V		4.1e-005	1.2e-003	V	100.0 : 1
	100%	±(0.1% Span)	9.990	10.010	9.997 V		5.2e-005	1.2e-003	V	100.0 : 1

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As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Voltage % Source - 0-10V Ch#3										
0 - 10V	0%	±(0.1% Span)	-0.010	0.010	0.000 V		5.0e-007	1.2e-003	V	100.0 : 1
	20%	±(0.1% Span)	1.990	2.010	1.999 V		1.1e-005	1.2e-003	V	100.0 : 1
	40%	±(0.1% Span)	3.990	4.010	4.001 V		2.1e-005	1.2e-003	V	100.0 : 1
	60%	±(0.1% Span)	5.990	6.010	6.000 V		3.1e-005	1.2e-003	V	100.0 : 1
	80%	±(0.1% Span)	7.990	8.010	7.999 V		4.1e-005	1.2e-003	V	100.0 : 1
	100%	±(0.1% Span)	9.990	10.010	9.998 V		5.2e-005	1.2e-003	V	100.0 : 1
DC Voltage % Source - 0-10V Ch#4										
0 - 10V	0%	±(0.1% Span)	-0.010	0.010	0.001 V		5.0e-007	1.2e-003	V	100.0 : 1
	20%	±(0.1% Span)	1.990	2.010	1.999 V		1.1e-005	1.2e-003	V	100.0 : 1
	40%	±(0.1% Span)	3.990	4.010	3.998 V		2.1e-005	1.2e-003	V	100.0 : 1
	60%	±(0.1% Span)	5.990	6.010	6.000 V		3.1e-005	1.2e-003	V	100.0 : 1
	80%	±(0.1% Span)	7.990	8.010	8.000 V		4.1e-005	1.2e-003	V	100.0 : 1
	100%	±(0.1% Span)	9.990	10.010	9.998 V		5.2e-005	1.2e-003	V	100.0 : 1

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1004 MIDDLEGATE ROAD
SUITE 1100
MISSISSAUGA, ON L4Y 1M4
PO Number: TR2018.02.14

Certificate/SO Number: 33-Q0W0C-20-1 Revision 0

Traceable Standards

Asset	Manufacturer	Model Number	Description	Cal Date	Due Date	Traceability Number	Use
N0150	Fluke Corporation	5700A	Calibrator	23-Jun-17	31-May-18	5-&N0150-14-1	AF
N0436	Agilent Technologies	3458A Opt 002	Digital Multimeter, 8.5 Digit	19-Apr-17	30-Apr-18	5-&N0436-14-1	AF/AL

The use of the standard is defined as: AF - used for as-found readings, AL - used for as-left readings.

Environmental Data

Temperature	Relative Humidity	Temp / RH Asset
71.35°F /21.86°C	33.50%	N0457

Calibrated At:
4043 Carling Avenue
Ottawa, ON K2K 2A4

Facility Responsible:
4043 Carling Avenue
Ottawa, ON K2K 2A4
800-828-1470

Calibrated By:
Electronically Signed By:
Mark King

Mark King	Feb 20, 2018
Calibration Technician	15:08:17 -05:00

Reviewed By:
Electronically Signed By:
Francis Kane

Francis Kane	Feb 20, 2018
Lab Manager	15:24:41 -05:00

Unit Barcode: 901B0150195

Date Received: February 15, 2018
Service Level : R9

Customer Number: 9-322110-000

ISO17025

As Found RECALIBRATION CERTIFICATE

Sales Region:	Canada
Account:	Aercoustics Engineering Ltd
Instrument:	LMS SCADAS
Manufacturer:	Siemens Industry Software B.V.
Type:	SCR05
Serial number(s):	53103922
Calibration method:	Two calibrated external standards (DC voltage and frequency) are used to calibrate the internal LMS SCADAS references: time/frequency accuracy of the internal system clock and amplitude accuracy of the internal signal sources. All input channels are calibrated against the internal references.
Ambient conditions:	The calibrations have been carried out in a controlled environment, at an ambient temperature of 23.4°C and a relative humidity of 47%.
Calibration date:	October 24, 2017
Results:	The calibration results, together with their associated uncertainties, are included in this calibration certificate. *Calibration results within specification.*
Uncertainty:	The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k =2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with publication EA-4/02.
Traceability:	The measurements have been executed using methods for which the traceability to international standards has been demonstrated towards the Raad voor Accreditatie.

Breda, October 25, 2017

Calibration performed by:

Wilfred Nolles

Certificate approved by:

Frank Lemmens

The Raad voor Accreditatie is one of the signatories of the Multilateral Agreement of the European Cooperation for Accreditation (EA) for the mutual recognition of calibration certificates.

Siemens Industry Software B.V.
Weidehek 53
4824 AT Breda
The Netherlands
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Table of contents

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1 Explanation of the factory calibration procedure

The production process of an LMS SCADAS front-end consists of a number of stages.
Every single board or module that will be part of the system is tested extensively on reliability and functionality before it is inserted in the LMS SCADAS frame.
After assembly, the amplitude accuracy and offset errors of all input and output channels are adjusted to a value as close to zero as possible. The adjustment procedure incorporates external measurement equipment, which is documented in the next section of this report.

As a final step, the front-end is submitted to a factory calibration. The factory calibration verifies whether all input and output channels meet their published specifications with respect to amplitude accuracy, offset, and a number of dynamic capabilities such as distortion, signal to noise ratio and inter-channel crosstalk. The measurements that are done as a part of the calibration use an internal reference source, which has been calibrated against an external standard (documented in the next section of this report).
The results of this calibration procedure are documented in the *Calibration Certificate* you have in front of you.

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2 External reference - used equipment

	Type	Serial Number	Cal Certificate	Cal Date
Digital Multimeter	Agilent 34401A	MY41040399	201702735.00	July 21, 2017
Calibration software	NA	2.10.0001	NA	NA

The external reference (DMM) is calibrated on a yearly basis by a calibration laboratory that is ISO17025:2005 accredited by The Dutch Accreditation Council RvA.

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3 System configuration

Frame	Backplane Module	Conditioner	Unique number	Hardware version	Software version	Option
Master (0)			0053103922			
	XSIDA BT GPS (0)		2009501008	2	0	
	VC8_E (1)		2010788002	0	0	
	VC8_E (2)		2010788018	0	0	
	XSII CF CN (3)		2012144006	10	0	
	PS12-2 MOB (4)		2010622010	12	11	

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4 VC8_E_h0s0

4.1 Gain Accuracy after Adjustment

Description of calibration:
Determination of the amplitude accuracy of the input channels over all input ranges and available ADC bandwidths, by applying an accurate 1kHz -3dBFS (max 4V) sine wave which is generated by the internal reference generator. For charge amplifiers, the reference voltage signal is translated to a reference charge signal.
The reported values represent the deviations from the expected signal amplitude, both absolute (either in Volt or Coulomb, depending on the input channel type) and relative (in %).

AdcBw 102400Hz, Range 0.316V Alternating voltage 100mV < IR <= 316mV Spec: <= ±0.100% Uncertainty: 72µV	
Chan	Value
0,1,x,0	-0.014 mV, -0.006%
0,1,x,1	-0.017 mV, -0.007%
0,1,x,2	-0.013 mV, -0.006%
0,1,x,3	-0.014 mV, -0.006%
0,1,x,4	-0.015 mV, -0.007%
0,1,x,5	-0.015 mV, -0.007%
0,1,x,6	-0.015 mV, -0.007%
0,1,x,7	-0.019 mV, -0.008%
0,2,x,0	-0.020 mV, -0.009%
0,2,x,1	-0.020 mV, -0.009%
0,2,x,2	-0.012 mV, -0.005%
0,2,x,3	-0.016 mV, -0.007%
0,2,x,4	-0.018 mV, -0.008%
0,2,x,5	-0.016 mV, -0.007%
0,2,x,6	-0.014 mV, -0.006%
0,2,x,7	-0.013 mV, -0.006%

AdcBw 102400Hz, Range 1V Alternating voltage 316mV < IR <= 1V Spec: <= ±0.100% Uncertainty: 140µV	
Chan	Value
0,1,x,0	-0.008 mV, -0.001%
0,1,x,1	-0.012 mV, -0.002%
0,1,x,2	-0.003 mV, -0.000%
0,1,x,3	-0.002 mV, -0.000%
0,1,x,4	-0.010 mV, -0.001%
0,1,x,5	-0.010 mV, -0.001%
0,1,x,6	-0.009 mV, -0.001%
0,1,x,7	-0.018 mV, -0.002%
0,2,x,0	-0.017 mV, -0.002%
0,2,x,1	-0.019 mV, -0.003%
0,2,x,2	0.003 mV, 0.000%
0,2,x,3	-0.009 mV, -0.001%
0,2,x,4	-0.017 mV, -0.002%
0,2,x,5	-0.005 mV, -0.001%
0,2,x,6	-0.001 mV, -0.000%
0,2,x,7	-0.005 mV, -0.001%

AdcBw 102400Hz, Range 3.16V Alternating voltage 1V < IR <= 3.16V Spec: <= ±0.100% Uncertainty: 370µV	
Chan	Value
0,1,x,0	0.058 mV, 0.003%
0,1,x,1	0.044 mV, 0.002%
0,1,x,2	0.066 mV, 0.003%
0,1,x,3	0.071 mV, 0.003%
0,1,x,4	0.041 mV, 0.002%
0,1,x,5	0.051 mV, 0.002%
0,1,x,6	0.049 mV, 0.002%
0,1,x,7	-0.002 mV, -0.000%
0,2,x,0	0.016 mV, 0.001%
0,2,x,1	0.011 mV, 0.000%
0,2,x,2	0.081 mV, 0.004%
0,2,x,3	0.040 mV, 0.002%
0,2,x,4	0.019 mV, 0.001%
0,2,x,5	0.062 mV, 0.003%
0,2,x,6	0.077 mV, 0.003%
0,2,x,7	0.068 mV, 0.003%

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AdcBw 102400Hz, Range 10V
Alternating voltage 3.16V < IR <= 10V
Spec: <= ±0.100%
Uncertainty: 640µV

Chan	Value
0,1,x,0	0.175 mV, 0.004%
0,1,x,1	0.145 mV, 0.004%
0,1,x,2	0.186 mV, 0.005%
0,1,x,3	0.189 mV, 0.005%
0,1,x,4	0.143 mV, 0.004%
0,1,x,5	0.154 mV, 0.004%
0,1,x,6	0.151 mV, 0.004%
0,1,x,7	0.095 mV, 0.002%
0,2,x,0	0.109 mV, 0.003%
0,2,x,1	0.085 mV, 0.002%
0,2,x,2	0.221 mV, 0.006%
0,2,x,3	0.155 mV, 0.004%
0,2,x,4	0.117 mV, 0.003%
0,2,x,5	0.160 mV, 0.004%
0,2,x,6	0.201 mV, 0.005%
0,2,x,7	0.189 mV, 0.005%

AdcBw 102400Hz, Range 316pC
Alternating charge IR <= 316pC
Spec: <= ±0.100%
Uncertainty: 3.0pC

Chan	Value
0,1,x,0	0.006 pC, 0.003%
0,1,x,1	0.003 pC, 0.001%
0,1,x,2	0.006 pC, 0.003%
0,1,x,3	0.003 pC, 0.001%
0,1,x,4	0.005 pC, 0.002%
0,1,x,5	0.005 pC, 0.002%
0,1,x,6	0.004 pC, 0.002%
0,1,x,7	-0.003 pC, -0.001%
0,2,x,0	-0.001 pC, -0.001%
0,2,x,1	-0.001 pC, -0.000%
0,2,x,2	0.010 pC, 0.004%
0,2,x,3	0.002 pC, 0.001%
0,2,x,4	-0.000 pC, -0.000%
0,2,x,5	0.004 pC, 0.002%
0,2,x,6	0.007 pC, 0.003%
0,2,x,7	0.006 pC, 0.003%

AdcBw 102400Hz, Range 1nC
Alternating charge 316pC < IR <= 1nC
Spec: <= ±0.100%
Uncertainty: 9.2pC

Chan	Value
0,1,x,0	0.026 pC, 0.004%
0,1,x,1	0.022 pC, 0.003%
0,1,x,2	0.029 pC, 0.004%
0,1,x,3	0.020 pC, 0.003%
0,1,x,4	0.022 pC, 0.003%
0,1,x,5	0.023 pC, 0.003%
0,1,x,6	0.022 pC, 0.003%
0,1,x,7	0.002 pC, 0.000%
0,2,x,0	0.014 pC, 0.002%
0,2,x,1	0.011 pC, 0.001%
0,2,x,2	0.039 pC, 0.006%
0,2,x,3	0.018 pC, 0.003%
0,2,x,4	0.011 pC, 0.002%
0,2,x,5	0.030 pC, 0.004%
0,2,x,6	0.032 pC, 0.005%
0,2,x,7	0.023 pC, 0.003%

AdcBw 102400Hz, Range 3.16nC
Alternating charge 1nC < IR <= 3.16nC
Spec: <= ±0.100%
Uncertainty: 30pC

Chan	Value
0,1,x,0	0.098 pC, 0.004%
0,1,x,1	0.084 pC, 0.004%
0,1,x,2	0.102 pC, 0.005%
0,1,x,3	0.074 pC, 0.003%
0,1,x,4	0.081 pC, 0.004%
0,1,x,5	0.087 pC, 0.004%
0,1,x,6	0.084 pC, 0.004%
0,1,x,7	-0.004 pC, -0.000%
0,2,x,0	0.053 pC, 0.002%
0,2,x,1	0.045 pC, 0.002%
0,2,x,2	0.122 pC, 0.005%
0,2,x,3	0.065 pC, 0.003%
0,2,x,4	0.044 pC, 0.002%
0,2,x,5	0.108 pC, 0.005%
0,2,x,6	0.117 pC, 0.005%
0,2,x,7	0.094 pC, 0.004%

AdcBw 102400Hz, Range 10nC
Alternating charge 3.16nC < IR <= 10nC
Spec: <= ±0.100%
Uncertainty: 96pC

Chan	Value
0,1,x,0	0.252 pC, 0.006%
0,1,x,1	0.220 pC, 0.006%
0,1,x,2	0.257 pC, 0.006%
0,1,x,3	0.195 pC, 0.005%
0,1,x,4	0.223 pC, 0.006%
0,1,x,5	0.219 pC, 0.005%
0,1,x,6	0.220 pC, 0.006%
0,1,x,7	0.103 pC, 0.003%
0,2,x,0	0.185 pC, 0.005%
0,2,x,1	0.165 pC, 0.004%
0,2,x,2	0.295 pC, 0.007%
0,2,x,3	0.208 pC, 0.005%
0,2,x,4	0.172 pC, 0.004%
0,2,x,5	0.250 pC, 0.006%
0,2,x,6	0.272 pC, 0.007%
0,2,x,7	0.237 pC, 0.006%

AdcBw 51200Hz, Range 0.316V
Alternating voltage 100mV < IR <= 316mV
Spec: <= ±0.100%
Uncertainty: 72µV

Chan	Value
0,1,x,0	0.021 mV, 0.009%
0,1,x,1	0.018 mV, 0.008%
0,1,x,2	0.021 mV, 0.009%
0,1,x,3	0.022 mV, 0.010%
0,1,x,4	0.020 mV, 0.009%
0,1,x,5	0.021 mV, 0.009%
0,1,x,6	0.019 mV, 0.009%
0,1,x,7	0.015 mV, 0.007%
0,2,x,0	0.013 mV, 0.006%
0,2,x,1	0.014 mV, 0.006%
0,2,x,2	0.024 mV, 0.011%
0,2,x,3	0.018 mV, 0.008%
0,2,x,4	0.017 mV, 0.007%
0,2,x,5	0.017 mV, 0.008%
0,2,x,6	0.022 mV, 0.010%
0,2,x,7	0.022 mV, 0.010%

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AdcBw 51200Hz, Range 1V Alternating voltage 316mV < IR <= 1V Spec: <= ±0.100% Uncertainty: 140µV	
Chan	Value
0,1,x,0	0.069 mV, 0.010%
0,1,x,1	0.064 mV, 0.009%
0,1,x,2	0.073 mV, 0.010%
0,1,x,3	0.076 mV, 0.011%
0,1,x,4	0.066 mV, 0.009%
0,1,x,5	0.069 mV, 0.010%
0,1,x,6	0.066 mV, 0.009%
0,1,x,7	0.056 mV, 0.008%
0,2,x,0	0.057 mV, 0.008%
0,2,x,1	0.053 mV, 0.007%
0,2,x,2	0.082 mV, 0.012%
0,2,x,3	0.066 mV, 0.009%
0,2,x,4	0.059 mV, 0.008%
0,2,x,5	0.070 mV, 0.010%
0,2,x,6	0.076 mV, 0.011%
0,2,x,7	0.072 mV, 0.010%

AdcBw 51200Hz, Range 10V Alternating voltage 3.16V < IR <= 10V Spec: <= ±0.100% Uncertainty: 640µV	
Chan	Value
0,1,x,0	0.392 mV, 0.010%
0,1,x,1	0.355 mV, 0.009%
0,1,x,2	0.399 mV, 0.010%
0,1,x,3	0.411 mV, 0.010%
0,1,x,4	0.359 mV, 0.009%
0,1,x,5	0.367 mV, 0.009%
0,1,x,6	0.362 mV, 0.009%
0,1,x,7	0.303 mV, 0.008%
0,2,x,0	0.320 mV, 0.008%
0,2,x,1	0.289 mV, 0.007%
0,2,x,2	0.450 mV, 0.011%
0,2,x,3	0.373 mV, 0.009%
0,2,x,4	0.337 mV, 0.008%
0,2,x,5	0.376 mV, 0.009%
0,2,x,6	0.428 mV, 0.011%
0,2,x,7	0.406 mV, 0.010%

AdcBw 51200Hz, Range 1nC Alternating charge 316pC < IR <= 1nC Spec: <= ±0.100% Uncertainty: 9.2pC	
Chan	Value
0,1,x,0	0.043 pC, 0.006%
0,1,x,1	0.038 pC, 0.005%
0,1,x,2	0.045 pC, 0.006%
0,1,x,3	0.038 pC, 0.005%
0,1,x,4	0.040 pC, 0.006%
0,1,x,5	0.040 pC, 0.006%
0,1,x,6	0.038 pC, 0.005%
0,1,x,7	0.019 pC, 0.003%
0,2,x,0	0.031 pC, 0.004%
0,2,x,1	0.025 pC, 0.004%
0,2,x,2	0.055 pC, 0.008%
0,2,x,3	0.035 pC, 0.005%
0,2,x,4	0.028 pC, 0.004%
0,2,x,5	0.045 pC, 0.006%
0,2,x,6	0.049 pC, 0.007%
0,2,x,7	0.041 pC, 0.006%

AdcBw 51200Hz, Range 3.16V Alternating voltage 1V < IR <= 3.16V Spec: <= ±0.100% Uncertainty: 370µV	
Chan	Value
0,1,x,0	0.221 mV, 0.010%
0,1,x,1	0.203 mV, 0.009%
0,1,x,2	0.228 mV, 0.010%
0,1,x,3	0.242 mV, 0.011%
0,1,x,4	0.203 mV, 0.009%
0,1,x,5	0.215 mV, 0.010%
0,1,x,6	0.209 mV, 0.009%
0,1,x,7	0.154 mV, 0.007%
0,2,x,0	0.171 mV, 0.008%
0,2,x,1	0.164 mV, 0.007%
0,2,x,2	0.250 mV, 0.011%
0,2,x,3	0.201 mV, 0.009%
0,2,x,4	0.179 mV, 0.008%
0,2,x,5	0.225 mV, 0.010%
0,2,x,6	0.248 mV, 0.011%
0,2,x,7	0.235 mV, 0.011%

AdcBw 51200Hz, Range 316pC Alternating charge IR <= 316pC Spec: <= ±0.100% Uncertainty: 3.0pC	
Chan	Value
0,1,x,0	0.013 pC, 0.006%
0,1,x,1	0.009 pC, 0.004%
0,1,x,2	0.012 pC, 0.005%
0,1,x,3	0.009 pC, 0.004%
0,1,x,4	0.011 pC, 0.005%
0,1,x,5	0.011 pC, 0.005%
0,1,x,6	0.010 pC, 0.005%
0,1,x,7	0.003 pC, 0.001%
0,2,x,0	0.004 pC, 0.002%
0,2,x,1	0.004 pC, 0.002%
0,2,x,2	0.016 pC, 0.007%
0,2,x,3	0.007 pC, 0.003%
0,2,x,4	0.006 pC, 0.003%
0,2,x,5	0.008 pC, 0.004%
0,2,x,6	0.012 pC, 0.006%
0,2,x,7	0.013 pC, 0.006%

AdcBw 51200Hz, Range 3.16nC Alternating charge 1nC < IR <= 3.16nC Spec: <= ±0.100% Uncertainty: 30pC	
Chan	Value
0,1,x,0	0.137 pC, 0.006%
0,1,x,1	0.114 pC, 0.005%
0,1,x,2	0.134 pC, 0.006%
0,1,x,3	0.116 pC, 0.005%
0,1,x,4	0.117 pC, 0.005%
0,1,x,5	0.119 pC, 0.005%
0,1,x,6	0.116 pC, 0.005%
0,1,x,7	0.030 pC, 0.001%
0,2,x,0	0.083 pC, 0.004%
0,2,x,1	0.071 pC, 0.003%
0,2,x,2	0.158 pC, 0.007%
0,2,x,3	0.099 pC, 0.004%
0,2,x,4	0.076 pC, 0.003%
0,2,x,5	0.139 pC, 0.006%
0,2,x,6	0.156 pC, 0.007%
0,2,x,7	0.136 pC, 0.006%

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AdcBw 51200Hz, Range 10nC
Alternating charge 3.16nC < IR <= 10nC
Spec: <= ±0.100%
Uncertainty: 96pC

Chan	Value
0,1,x,0	0.255 pC, 0.006%
0,1,x,1	0.219 pC, 0.005%
0,1,x,2	0.252 pC, 0.006%
0,1,x,3	0.199 pC, 0.005%
0,1,x,4	0.221 pC, 0.006%
0,1,x,5	0.218 pC, 0.005%
0,1,x,6	0.216 pC, 0.005%
0,1,x,7	0.099 pC, 0.002%
0,2,x,0	0.181 pC, 0.005%
0,2,x,1	0.144 pC, 0.004%
0,2,x,2	0.298 pC, 0.007%
0,2,x,3	0.205 pC, 0.005%
0,2,x,4	0.169 pC, 0.004%
0,2,x,5	0.240 pC, 0.006%
0,2,x,6	0.275 pC, 0.007%
0,2,x,7	0.242 pC, 0.006%

AdcBw 25600Hz, Range 1V
Alternating voltage 316mV < IR <= 1V
Spec: <= ±0.100%
Uncertainty: 140µV

Chan	Value
0,1,x,0	0.081 mV, 0.011%
0,1,x,1	0.075 mV, 0.011%
0,1,x,2	0.084 mV, 0.012%
0,1,x,3	0.089 mV, 0.013%
0,1,x,4	0.079 mV, 0.011%
0,1,x,5	0.081 mV, 0.011%
0,1,x,6	0.077 mV, 0.011%
0,1,x,7	0.068 mV, 0.010%
0,2,x,0	0.068 mV, 0.010%
0,2,x,1	0.063 mV, 0.009%
0,2,x,2	0.095 mV, 0.013%
0,2,x,3	0.078 mV, 0.011%
0,2,x,4	0.071 mV, 0.010%
0,2,x,5	0.082 mV, 0.012%
0,2,x,6	0.089 mV, 0.013%
0,2,x,7	0.084 mV, 0.012%

AdcBw 25600Hz, Range 10V
Alternating voltage 3.16V < IR <= 10V
Spec: <= ±0.100%
Uncertainty: 640µV

Chan	Value
0,1,x,0	0.456 mV, 0.011%
0,1,x,1	0.425 mV, 0.011%
0,1,x,2	0.464 mV, 0.012%
0,1,x,3	0.478 mV, 0.012%
0,1,x,4	0.424 mV, 0.011%
0,1,x,5	0.441 mV, 0.011%
0,1,x,6	0.426 mV, 0.011%
0,1,x,7	0.364 mV, 0.009%
0,2,x,0	0.376 mV, 0.009%
0,2,x,1	0.345 mV, 0.009%
0,2,x,2	0.517 mV, 0.013%
0,2,x,3	0.437 mV, 0.011%
0,2,x,4	0.398 mV, 0.010%
0,2,x,5	0.432 mV, 0.011%
0,2,x,6	0.496 mV, 0.012%
0,2,x,7	0.471 mV, 0.012%

AdcBw 25600Hz, Range 0.316V
Alternating voltage 100mV < IR <= 316mV
Spec: <= ±0.100%
Uncertainty: 72µV

Chan	Value
0,1,x,0	0.025 mV, 0.011%
0,1,x,1	0.021 mV, 0.009%
0,1,x,2	0.025 mV, 0.011%
0,1,x,3	0.026 mV, 0.011%
0,1,x,4	0.023 mV, 0.010%
0,1,x,5	0.024 mV, 0.011%
0,1,x,6	0.023 mV, 0.010%
0,1,x,7	0.018 mV, 0.008%
0,2,x,0	0.017 mV, 0.008%
0,2,x,1	0.017 mV, 0.008%
0,2,x,2	0.029 mV, 0.013%
0,2,x,3	0.022 mV, 0.010%
0,2,x,4	0.020 mV, 0.009%
0,2,x,5	0.020 mV, 0.009%
0,2,x,6	0.026 mV, 0.012%
0,2,x,7	0.027 mV, 0.012%

AdcBw 25600Hz, Range 3.16V
Alternating voltage 1V < IR <= 3.16V
Spec: <= ±0.100%
Uncertainty: 370µV

Chan	Value
0,1,x,0	0.255 mV, 0.011%
0,1,x,1	0.226 mV, 0.010%
0,1,x,2	0.256 mV, 0.011%
0,1,x,3	0.275 mV, 0.012%
0,1,x,4	0.236 mV, 0.011%
0,1,x,5	0.241 mV, 0.011%
0,1,x,6	0.236 mV, 0.011%
0,1,x,7	0.179 mV, 0.008%
0,2,x,0	0.197 mV, 0.009%
0,2,x,1	0.188 mV, 0.008%
0,2,x,2	0.281 mV, 0.013%
0,2,x,3	0.230 mV, 0.010%
0,2,x,4	0.208 mV, 0.009%
0,2,x,5	0.250 mV, 0.011%
0,2,x,6	0.281 mV, 0.013%
0,2,x,7	0.267 mV, 0.012%

AdcBw 25600Hz, Range 316pC
Alternating charge IR <= 316pC
Spec: <= ±0.100%
Uncertainty: 3.0pC

Chan	Value
0,1,x,0	0.013 pC, 0.006%
0,1,x,1	0.009 pC, 0.004%
0,1,x,2	0.012 pC, 0.005%
0,1,x,3	0.010 pC, 0.004%
0,1,x,4	0.012 pC, 0.005%
0,1,x,5	0.011 pC, 0.005%
0,1,x,6	0.010 pC, 0.005%
0,1,x,7	0.003 pC, 0.001%
0,2,x,0	0.004 pC, 0.002%
0,2,x,1	0.004 pC, 0.002%
0,2,x,2	0.015 pC, 0.007%
0,2,x,3	0.007 pC, 0.003%
0,2,x,4	0.006 pC, 0.003%
0,2,x,5	0.008 pC, 0.003%
0,2,x,6	0.012 pC, 0.005%
0,2,x,7	0.013 pC, 0.006%

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AdcBw 25600Hz, Range 1nC Alternating charge 316pC < IR <= 1nC Spec: <= ±0.100% Uncertainty: 9.2pC	
Chan	Value
0,1,x,0	0.040 pC, 0.006%
0,1,x,1	0.033 pC, 0.005%
0,1,x,2	0.040 pC, 0.006%
0,1,x,3	0.034 pC, 0.005%
0,1,x,4	0.037 pC, 0.005%
0,1,x,5	0.035 pC, 0.005%
0,1,x,6	0.033 pC, 0.005%
0,1,x,7	0.015 pC, 0.002%
0,2,x,0	0.026 pC, 0.004%
0,2,x,1	0.020 pC, 0.003%
0,2,x,2	0.049 pC, 0.007%
0,2,x,3	0.030 pC, 0.004%
0,2,x,4	0.022 pC, 0.003%
0,2,x,5	0.040 pC, 0.006%
0,2,x,6	0.043 pC, 0.006%
0,2,x,7	0.038 pC, 0.005%

AdcBw 25600Hz, Range 3.16nC Alternating charge 1nC < IR <= 3.16nC Spec: <= ±0.100% Uncertainty: 30pC	
Chan	Value
0,1,x,0	0.151 pC, 0.007%
0,1,x,1	0.118 pC, 0.005%
0,1,x,2	0.145 pC, 0.006%
0,1,x,3	0.127 pC, 0.006%
0,1,x,4	0.130 pC, 0.006%
0,1,x,5	0.125 pC, 0.006%
0,1,x,6	0.126 pC, 0.006%
0,1,x,7	0.037 pC, 0.002%
0,2,x,0	0.092 pC, 0.004%
0,2,x,1	0.077 pC, 0.003%
0,2,x,2	0.164 pC, 0.007%
0,2,x,3	0.107 pC, 0.005%
0,2,x,4	0.085 pC, 0.004%
0,2,x,5	0.147 pC, 0.007%
0,2,x,6	0.166 pC, 0.007%
0,2,x,7	0.148 pC, 0.007%

AdcBw 25600Hz, Range 10nC Alternating charge 3.16nC < IR <= 10nC Spec: <= ±0.100% Uncertainty: 96pC	
Chan	Value
0,1,x,0	0.275 pC, 0.007%
0,1,x,1	0.238 pC, 0.006%
0,1,x,2	0.267 pC, 0.007%
0,1,x,3	0.221 pC, 0.006%
0,1,x,4	0.239 pC, 0.006%
0,1,x,5	0.239 pC, 0.006%
0,1,x,6	0.230 pC, 0.006%
0,1,x,7	0.115 pC, 0.003%
0,2,x,0	0.195 pC, 0.005%
0,2,x,1	0.146 pC, 0.004%
0,2,x,2	0.314 pC, 0.008%
0,2,x,3	0.224 pC, 0.006%
0,2,x,4	0.184 pC, 0.005%
0,2,x,5	0.245 pC, 0.006%
0,2,x,6	0.294 pC, 0.007%
0,2,x,7	0.264 pC, 0.007%

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4.2 Residual Offset after Adjustment

Description of calibration:
Determination of the residual input offsets of the input channels over all input ranges and available ADC bandwidths, by internally shorting the input channels to ground.

AdcBw 102400Hz, Range 0.316V Direct voltage IR <= 316mV Spec: <= ±0.316 mV Uncertainty: 4.8µV	
Chan	Value
0,1,x,0	0.027 mV
0,1,x,1	-0.005 mV
0,1,x,2	-0.015 mV
0,1,x,3	0.001 mV
0,1,x,4	0.003 mV
0,1,x,5	-0.005 mV
0,1,x,6	-0.007 mV
0,1,x,7	0.032 mV
0,2,x,0	0.003 mV
0,2,x,1	0.026 mV
0,2,x,2	-0.010 mV
0,2,x,3	0.009 mV
0,2,x,4	-0.006 mV
0,2,x,5	0.013 mV
0,2,x,6	0.001 mV
0,2,x,7	0.002 mV

AdcBw 102400Hz, Range 3.16V Direct voltage 1V < IR <= 3.16V Spec: <= ±3.160 mV Uncertainty: 8µV	
Chan	Value
0,1,x,0	-0.012 mV
0,1,x,1	0.019 mV
0,1,x,2	-0.058 mV
0,1,x,3	-0.022 mV
0,1,x,4	-0.058 mV
0,1,x,5	-0.086 mV
0,1,x,6	-0.069 mV
0,1,x,7	-0.006 mV
0,2,x,0	0.012 mV
0,2,x,1	-0.000 mV
0,2,x,2	-0.019 mV
0,2,x,3	-0.020 mV
0,2,x,4	-0.022 mV
0,2,x,5	-0.003 mV
0,2,x,6	-0.004 mV
0,2,x,7	-0.044 mV

AdcBw 51200Hz, Range 0.316V Direct voltage IR <= 316mV Spec: <= ±0.316 mV Uncertainty: 4.8µV	
Chan	Value
0,1,x,0	0.026 mV
0,1,x,1	-0.007 mV
0,1,x,2	-0.016 mV
0,1,x,3	-0.000 mV
0,1,x,4	-0.001 mV
0,1,x,5	-0.006 mV
0,1,x,6	-0.004 mV
0,1,x,7	0.028 mV
0,2,x,0	0.003 mV
0,2,x,1	0.026 mV
0,2,x,2	-0.011 mV
0,2,x,3	0.009 mV
0,2,x,4	-0.004 mV
0,2,x,5	0.015 mV
0,2,x,6	-0.006 mV
0,2,x,7	-0.001 mV

AdcBw 51200Hz, Range 3.16V Direct voltage 1V < IR <= 3.16V Spec: <= ±3.160 mV Uncertainty: 8µV	
Chan	Value
0,1,x,0	-0.001 mV
0,1,x,1	0.014 mV
0,1,x,2	-0.045 mV
0,1,x,3	-0.019 mV
0,1,x,4	-0.049 mV
0,1,x,5	-0.078 mV
0,1,x,6	-0.067 mV
0,1,x,7	-0.001 mV
0,2,x,0	0.017 mV
0,2,x,1	0.006 mV
0,2,x,2	-0.020 mV
0,2,x,3	-0.007 mV
0,2,x,4	-0.015 mV
0,2,x,5	0.001 mV
0,2,x,6	-0.018 mV
0,2,x,7	-0.045 mV

AdcBw 102400Hz, Range 1V Direct voltage 316mV < IR <= 1V Spec: <= ±1.000 mV Uncertainty: 5.2µV	
Chan	Value
0,1,x,0	0.019 mV
0,1,x,1	-0.003 mV
0,1,x,2	-0.026 mV
0,1,x,3	-0.005 mV
0,1,x,4	-0.013 mV
0,1,x,5	-0.021 mV
0,1,x,6	-0.024 mV
0,1,x,7	0.024 mV
0,2,x,0	0.005 mV
0,2,x,1	0.022 mV
0,2,x,2	-0.015 mV
0,2,x,3	0.004 mV
0,2,x,4	-0.010 mV
0,2,x,5	0.009 mV
0,2,x,6	-0.002 mV
0,2,x,7	-0.006 mV

AdcBw 102400Hz, Range 10V Direct voltage 3.16V < IR <= 10V Spec: <= ±10.000 mV Uncertainty: 21µV	
Chan	Value
0,1,x,0	-0.083 mV
0,1,x,1	0.081 mV
0,1,x,2	-0.138 mV
0,1,x,3	-0.074 mV
0,1,x,4	-0.187 mV
0,1,x,5	-0.284 mV
0,1,x,6	-0.234 mV
0,1,x,7	-0.080 mV
0,2,x,0	0.036 mV
0,2,x,1	-0.047 mV
0,2,x,2	-0.030 mV
0,2,x,3	-0.063 mV
0,2,x,4	-0.059 mV
0,2,x,5	-0.028 mV
0,2,x,6	-0.022 mV
0,2,x,7	-0.147 mV

AdcBw 51200Hz, Range 1V Direct voltage 316mV < IR <= 1V Spec: <= ±1.000 mV Uncertainty: 5.2µV	
Chan	Value
0,1,x,0	0.019 mV
0,1,x,1	0.001 mV
0,1,x,2	-0.022 mV
0,1,x,3	-0.006 mV
0,1,x,4	-0.011 mV
0,1,x,5	-0.025 mV
0,1,x,6	-0.017 mV
0,1,x,7	0.020 mV
0,2,x,0	0.005 mV
0,2,x,1	0.022 mV
0,2,x,2	-0.010 mV
0,2,x,3	0.003 mV
0,2,x,4	-0.006 mV
0,2,x,5	0.011 mV
0,2,x,6	-0.008 mV
0,2,x,7	-0.010 mV

AdcBw 51200Hz, Range 10V Direct voltage 3.16V < IR <= 10V Spec: <= ±10.000 mV Uncertainty: 21µV	
Chan	Value
0,1,x,0	-0.060 mV
0,1,x,1	0.085 mV
0,1,x,2	-0.113 mV
0,1,x,3	-0.056 mV
0,1,x,4	-0.183 mV
0,1,x,5	-0.283 mV
0,1,x,6	-0.202 mV
0,1,x,7	-0.094 mV
0,2,x,0	0.029 mV
0,2,x,1	-0.040 mV
0,2,x,2	-0.052 mV
0,2,x,3	-0.062 mV
0,2,x,4	-0.042 mV
0,2,x,5	-0.030 mV
0,2,x,6	-0.050 mV
0,2,x,7	-0.127 mV

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AdcBw 25600Hz, Range 0.316V Direct voltage IR <= 316mV Spec: <= ±0.316 mV Uncertainty: 4.8µV	
Chan	Value
0,1,x,0	0.024 mV
0,1,x,1	-0.010 mV
0,1,x,2	-0.015 mV
0,1,x,3	0.002 mV
0,1,x,4	-0.003 mV
0,1,x,5	-0.004 mV
0,1,x,6	-0.002 mV
0,1,x,7	0.026 mV
0,2,x,0	0.002 mV
0,2,x,1	0.024 mV
0,2,x,2	-0.010 mV
0,2,x,3	0.013 mV
0,2,x,4	-0.009 mV
0,2,x,5	0.018 mV
0,2,x,6	-0.006 mV
0,2,x,7	-0.002 mV

AdcBw 25600Hz, Range 3.16V Direct voltage 1V < IR <= 3.16V Spec: <= ±3.160 mV Uncertainty: 8µV	
Chan	Value
0,1,x,0	-0.003 mV
0,1,x,1	0.015 mV
0,1,x,2	-0.047 mV
0,1,x,3	-0.020 mV
0,1,x,4	-0.056 mV
0,1,x,5	-0.089 mV
0,1,x,6	-0.059 mV
0,1,x,7	-0.009 mV
0,2,x,0	0.013 mV
0,2,x,1	0.008 mV
0,2,x,2	-0.021 mV
0,2,x,3	-0.001 mV
0,2,x,4	-0.016 mV
0,2,x,5	0.006 mV
0,2,x,6	-0.023 mV
0,2,x,7	-0.037 mV

AdcBw 25600Hz, Range 1V Direct voltage 316mV < IR <= 1V Spec: <= ±1.000 mV Uncertainty: 5.2µV	
Chan	Value
0,1,x,0	0.016 mV
0,1,x,1	-0.004 mV
0,1,x,2	-0.022 mV
0,1,x,3	-0.003 mV
0,1,x,4	-0.016 mV
0,1,x,5	-0.027 mV
0,1,x,6	-0.015 mV
0,1,x,7	0.013 mV
0,2,x,0	0.003 mV
0,2,x,1	0.016 mV
0,2,x,2	-0.013 mV
0,2,x,3	0.007 mV
0,2,x,4	-0.009 mV
0,2,x,5	0.014 mV
0,2,x,6	-0.012 mV
0,2,x,7	-0.009 mV

AdcBw 25600Hz, Range 10V Direct voltage 3.16V < IR <= 10V Spec: <= ±10.000 mV Uncertainty: 21µV	
Chan	Value
0,1,x,0	-0.087 mV
0,1,x,1	0.089 mV
0,1,x,2	-0.117 mV
0,1,x,3	-0.086 mV
0,1,x,4	-0.184 mV
0,1,x,5	-0.314 mV
0,1,x,6	-0.199 mV
0,1,x,7	-0.103 mV
0,2,x,0	0.047 mV
0,2,x,1	-0.045 mV
0,2,x,2	-0.030 mV
0,2,x,3	-0.048 mV
0,2,x,4	-0.049 mV
0,2,x,5	-0.027 mV
0,2,x,6	-0.074 mV
0,2,x,7	-0.122 mV

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4.3 Total Harmonic Distortion

Description of calibration:
Determination of the harmonic distortion of the input channels over all input ranges, by applying an accurate 1kHz -3dBFS (max 4V) sine wave which is generated by the internal reference generator. For charge amplifiers, the reference voltage signal is translated to a reference charge signal. Harmonic components 2, 3, 4 and 5 are determined to calculate the harmonic content (either in Volt or Coulomb, depending on the input channel type) and the ratio between the fundamental tone and its harmonics (in dB).

Range 10V
Distortion 3.16V < IR <= 10V
Spec: <= -94.0dB
Uncertainty: 2.6µV

Chan	Value
0,1,x,0	15.463 µV, -108.3dB
0,1,x,1	16.216 µV, -107.8dB
0,1,x,2	15.755 µV, -108.1dB
0,1,x,3	15.225 µV, -108.4dB
0,1,x,4	14.711 µV, -108.7dB
0,1,x,5	14.920 µV, -108.6dB
0,1,x,6	14.943 µV, -108.6dB
0,1,x,7	15.216 µV, -108.4dB
0,2,x,0	15.326 µV, -108.3dB
0,2,x,1	14.758 µV, -108.7dB
0,2,x,2	15.474 µV, -108.2dB
0,2,x,3	14.916 µV, -108.6dB
0,2,x,4	15.006 µV, -108.5dB
0,2,x,5	15.041 µV, -108.5dB
0,2,x,6	14.961 µV, -108.5dB
0,2,x,7	13.064 µV, -109.7dB

Range 1 V
Distortion 316mV < IR <= 1V
Spec: <= -94.0dB
Uncertainty: 290nV

Chan	Value
0,1,x,0	5.055 µV, -102.9dB
0,1,x,1	5.187 µV, -102.7dB
0,1,x,2	5.123 µV, -102.8dB
0,1,x,3	4.887 µV, -103.2dB
0,1,x,4	4.559 µV, -103.8dB
0,1,x,5	4.998 µV, -103.0dB
0,1,x,6	4.860 µV, -103.3dB
0,1,x,7	4.753 µV, -103.4dB
0,2,x,0	5.607 µV, -102.0dB
0,2,x,1	5.262 µV, -102.6dB
0,2,x,2	5.492 µV, -102.2dB
0,2,x,3	5.364 µV, -102.4dB
0,2,x,4	5.143 µV, -102.8dB
0,2,x,5	4.779 µV, -103.4dB
0,2,x,6	5.199 µV, -102.7dB
0,2,x,7	5.010 µV, -103.0dB

Range 10nC
Distortion 3.16nC < IR <= 10nC
Spec: <= -94.0dB
Uncertainty: 2.6fC

Chan	Value
0,1,x,0	22.372 fC, -105.0dB
0,1,x,1	23.497 fC, -104.6dB
0,1,x,2	22.060 fC, -105.2dB
0,1,x,3	21.667 fC, -105.3dB
0,1,x,4	21.145 fC, -105.5dB
0,1,x,5	21.951 fC, -105.2dB
0,1,x,6	22.107 fC, -105.2dB
0,1,x,7	20.616 fC, -105.8dB
0,2,x,0	23.308 fC, -104.7dB
0,2,x,1	21.936 fC, -105.2dB
0,2,x,2	23.245 fC, -104.7dB
0,2,x,3	21.748 fC, -105.3dB
0,2,x,4	22.222 fC, -105.1dB
0,2,x,5	21.998 fC, -105.2dB
0,2,x,6	22.137 fC, -105.1dB
0,2,x,7	18.755 fC, -106.6dB

Range 3.16V
Distortion 1V < IR <= 3.16V
Spec: <= -94.0dB
Uncertainty: 0.8µV

Chan	Value
0,1,x,0	6.286 µV, -111.0dB
0,1,x,1	6.977 µV, -110.1dB
0,1,x,2	6.083 µV, -111.3dB
0,1,x,3	6.354 µV, -110.9dB
0,1,x,4	4.898 µV, -113.2dB
0,1,x,5	5.632 µV, -112.0dB
0,1,x,6	5.967 µV, -111.5dB
0,1,x,7	5.691 µV, -111.9dB
0,2,x,0	6.628 µV, -110.6dB
0,2,x,1	6.170 µV, -111.2dB
0,2,x,2	7.023 µV, -110.1dB
0,2,x,3	6.048 µV, -111.4dB
0,2,x,4	5.616 µV, -112.0dB
0,2,x,5	5.120 µV, -112.8dB
0,2,x,6	5.480 µV, -112.2dB
0,2,x,7	3.963 µV, -115.0dB

Range 0.316V
Distortion 100mV < IR <= 316mV
Spec: <= -91.0dB
Uncertainty: 140nV

Chan	Value
0,1,x,0	4.141 µV, -94.6dB
0,1,x,1	4.159 µV, -94.6dB
0,1,x,2	4.303 µV, -94.3dB
0,1,x,3	3.973 µV, -95.0dB
0,1,x,4	3.893 µV, -95.2dB
0,1,x,5	4.300 µV, -94.3dB
0,1,x,6	4.029 µV, -94.9dB
0,1,x,7	4.056 µV, -94.8dB
0,2,x,0	4.815 µV, -93.3dB
0,2,x,1	4.287 µV, -94.3dB
0,2,x,2	4.477 µV, -94.0dB
0,2,x,3	4.599 µV, -93.7dB
0,2,x,4	4.429 µV, -94.1dB
0,2,x,5	4.044 µV, -94.8dB
0,2,x,6	4.557 µV, -93.8dB
0,2,x,7	4.666 µV, -93.6dB

Range 3.16nC
Distortion 1nC < IR <= 3.16nC
Spec: <= -94.0dB
Uncertainty: 0.8fC

Chan	Value
0,1,x,0	13.908 fC, -104.1dB
0,1,x,1	14.496 fC, -103.8dB
0,1,x,2	13.574 fC, -104.3dB
0,1,x,3	14.048 fC, -104.0dB
0,1,x,4	12.624 fC, -105.0dB
0,1,x,5	13.264 fC, -104.5dB
0,1,x,6	13.791 fC, -104.2dB
0,1,x,7	13.398 fC, -104.4dB
0,2,x,0	13.828 fC, -104.2dB
0,2,x,1	13.506 fC, -104.4dB
0,2,x,2	14.425 fC, -103.8dB
0,2,x,3	13.000 fC, -104.7dB
0,2,x,4	13.031 fC, -104.7dB
0,2,x,5	12.827 fC, -104.8dB
0,2,x,6	12.820 fC, -104.8dB
0,2,x,7	10.623 fC, -106.5dB

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Range 1nC **Distortion 316pC < IR <= 1nC** **Spec: <= -94.0dB** **Uncertainty: 290aC**	
Chan	Value
0,1,x,0	6.812 fC, -100.3dB
0,1,x,1	7.093 fC, -100.0dB
0,1,x,2	6.824 fC, -100.3dB
0,1,x,3	6.707 fC, -100.5dB
0,1,x,4	6.411 fC, -100.9dB
0,1,x,5	6.641 fC, -100.5dB
0,1,x,6	6.677 fC, -100.5dB
0,1,x,7	6.600 fC, -100.6dB
0,2,x,0	7.276 fC, -99.8dB
0,2,x,1	6.995 fC, -100.1dB
0,2,x,2	7.245 fC, -99.8dB
0,2,x,3	6.939 fC, -100.2dB
0,2,x,4	6.855 fC, -100.3dB
0,2,x,5	6.599 fC, -100.6dB
0,2,x,6	6.852 fC, -100.3dB
0,2,x,7	6.325 fC, -101.0dB

Range 0.316nC **Distortion IR <= 316pC** **Spec: <= -90.0dB** **Uncertainty: 140aC**	
Chan	Value
0,1,x,0	4.550 fC, -93.8dB
0,1,x,1	4.642 fC, -93.6dB
0,1,x,2	4.663 fC, -93.6dB
0,1,x,3	4.465 fC, -94.0dB
0,1,x,4	4.451 fC, -94.0dB
0,1,x,5	4.555 fC, -93.8dB
0,1,x,6	4.481 fC, -94.0dB
0,1,x,7	4.482 fC, -94.0dB
0,2,x,0	5.098 fC, -92.8dB
0,2,x,1	4.867 fC, -93.2dB
0,2,x,2	4.937 fC, -93.1dB
0,2,x,3	4.895 fC, -93.2dB
0,2,x,4	4.916 fC, -93.2dB
0,2,x,5	4.712 fC, -93.5dB
0,2,x,6	4.982 fC, -93.0dB
0,2,x,7	4.756 fC, -93.4dB

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4.4 RMS Noise

Description of calibration:
Determination of the noise contribution of the input channels, by internally shorting the input channels to ground. The reported values are RMS values over the corresponding bandwidth.

Range 10V, Bw 80kHz Not in Scope Spec: < 311.0000µVrms	
Chan	Value
0,1,x,0	215.7331µVrms
0,1,x,1	216.8399µVrms
0,1,x,2	215.1143µVrms
0,1,x,3	214.9676µVrms
0,1,x,4	217.1991µVrms
0,1,x,5	219.4411µVrms
0,1,x,6	219.4025µVrms
0,1,x,7	217.0582µVrms
0,2,x,0	218.4044µVrms
0,2,x,1	220.6707µVrms
0,2,x,2	214.5613µVrms
0,2,x,3	218.7858µVrms
0,2,x,4	219.2260µVrms
0,2,x,5	220.7999µVrms
0,2,x,6	216.1602µVrms
0,2,x,7	215.5046µVrms

Range 10nC, Bw 80kHz Not in Scope Spec: < 331.0000fCrms	
Chan	Value
0,1,x,0	216.9160fCrms
0,1,x,1	217.7132fCrms
0,1,x,2	216.2103fCrms
0,1,x,3	215.2511fCrms
0,1,x,4	218.4760fCrms
0,1,x,5	220.4308fCrms
0,1,x,6	220.4813fCrms
0,1,x,7	217.5184fCrms
0,2,x,0	217.5387fCrms
0,2,x,1	220.4054fCrms
0,2,x,2	213.5679fCrms
0,2,x,3	219.7129fCrms
0,2,x,4	218.4869fCrms
0,2,x,5	218.6897fCrms
0,2,x,6	216.9374fCrms
0,2,x,7	215.5797fCrms

Range 10V, Bw 40kHz Not in Scope Spec: < 42.0000µVrms	
Chan	Value
0,1,x,0	31.0481µVrms
0,1,x,1	30.9056µVrms
0,1,x,2	30.5448µVrms
0,1,x,3	30.2800µVrms
0,1,x,4	31.1077µVrms
0,1,x,5	30.9900µVrms
0,1,x,6	31.0441µVrms
0,1,x,7	30.4306µVrms
0,2,x,0	31.1010µVrms
0,2,x,1	31.8063µVrms
0,2,x,2	30.8414µVrms
0,2,x,3	30.6689µVrms
0,2,x,4	30.4073µVrms
0,2,x,5	30.7581µVrms
0,2,x,6	30.9162µVrms
0,2,x,7	30.4965µVrms

Range 0.316V, Bw 80kHz Not in Scope Spec: < 10.5000µVrms	
Chan	Value
0,1,x,0	7.2655µVrms
0,1,x,1	7.3131µVrms
0,1,x,2	7.2502µVrms
0,1,x,3	7.2040µVrms
0,1,x,4	7.3174µVrms
0,1,x,5	7.3369µVrms
0,1,x,6	7.4118µVrms
0,1,x,7	7.2699µVrms
0,2,x,0	7.3112µVrms
0,2,x,1	7.4048µVrms
0,2,x,2	7.2379µVrms
0,2,x,3	7.2816µVrms
0,2,x,4	7.3230µVrms
0,2,x,5	7.3056µVrms
0,2,x,6	7.3281µVrms
0,2,x,7	7.2234µVrms

Range 0.316nC, Bw 80kHz Not in Scope Spec: < 12.1000fCrms	
Chan	Value
0,1,x,0	8.5676fCrms
0,1,x,1	8.4833fCrms
0,1,x,2	8.4951fCrms
0,1,x,3	8.4640fCrms
0,1,x,4	8.4615fCrms
0,1,x,5	8.3955fCrms
0,1,x,6	8.5839fCrms
0,1,x,7	8.4918fCrms
0,2,x,0	8.5019fCrms
0,2,x,1	8.6402fCrms
0,2,x,2	8.4711fCrms
0,2,x,3	8.4602fCrms
0,2,x,4	8.3771fCrms
0,2,x,5	8.4910fCrms
0,2,x,6	8.4662fCrms
0,2,x,7	8.5282fCrms

Range 0.316V, Bw 40kHz Not in Scope Spec: < 2.8000µVrms	
Chan	Value
0,1,x,0	2.0543µVrms
0,1,x,1	2.0619µVrms
0,1,x,2	2.0645µVrms
0,1,x,3	2.0559µVrms
0,1,x,4	2.0637µVrms
0,1,x,5	2.0613µVrms
0,1,x,6	2.0678µVrms
0,1,x,7	2.0544µVrms
0,2,x,0	2.0552µVrms
0,2,x,1	2.0688µVrms
0,2,x,2	2.0647µVrms
0,2,x,3	2.0561µVrms
0,2,x,4	2.0526µVrms
0,2,x,5	2.0690µVrms
0,2,x,6	2.0548µVrms
0,2,x,7	2.0533µVrms

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Range 10nC, Bw 40kHz Not in Scope Spec: < 44.5000fCrms	
Chan	Value
0,1,x,0	31.1678fCrms
0,1,x,1	30.9036fCrms
0,1,x,2	30.8610fCrms
0,1,x,3	30.6852fCrms
0,1,x,4	31.2625fCrms
0,1,x,5	31.2388fCrms
0,1,x,6	31.4626fCrms
0,1,x,7	31.2002fCrms
0,2,x,0	31.4553fCrms
0,2,x,1	32.0019fCrms
0,2,x,2	31.1568fCrms
0,2,x,3	31.0972fCrms
0,2,x,4	30.9503fCrms
0,2,x,5	31.0932fCrms
0,2,x,6	31.1749fCrms
0,2,x,7	30.8646fCrms

Range 0.316nC, Bw 40kHz Not in Scope Spec: < 5.3700fCrms	
Chan	Value
0,1,x,0	3.7320fCrms
0,1,x,1	3.6576fCrms
0,1,x,2	3.6431fCrms
0,1,x,3	3.7079fCrms
0,1,x,4	3.7499fCrms
0,1,x,5	3.6826fCrms
0,1,x,6	3.6674fCrms
0,1,x,7	3.7069fCrms
0,2,x,0	3.6692fCrms
0,2,x,1	3.6771fCrms
0,2,x,2	3.6382fCrms
0,2,x,3	3.6994fCrms
0,2,x,4	3.6884fCrms
0,2,x,5	3.6640fCrms
0,2,x,6	3.6950fCrms
0,2,x,7	3.7135fCrms

Range 10V, Bw 20kHz Noise 3.16V < IR <= 10V Spec: <= 29.000 µV Uncertainty: 3.4nV	
Chan	Value
0,1,x,0	20.707 µV
0,1,x,1	20.504 µV
0,1,x,2	20.650 µV
0,1,x,3	20.418 µV
0,1,x,4	20.924 µV
0,1,x,5	20.383 µV
0,1,x,6	20.609 µV
0,1,x,7	20.366 µV
0,2,x,0	20.884 µV
0,2,x,1	20.717 µV
0,2,x,2	21.268 µV
0,2,x,3	21.039 µV
0,2,x,4	20.563 µV
0,2,x,5	20.436 µV
0,2,x,6	20.616 µV
0,2,x,7	20.272 µV

Range 0.316V, Bw 20kHz Noise IR <= 316mV Spec: <= 1.980 µV Uncertainty: 2.0nV	
Chan	Value
0,1,x,0	1.455 µV
0,1,x,1	1.457 µV
0,1,x,2	1.454 µV
0,1,x,3	1.458 µV
0,1,x,4	1.458 µV
0,1,x,5	1.455 µV
0,1,x,6	1.460 µV
0,1,x,7	1.445 µV
0,2,x,0	1.449 µV
0,2,x,1	1.455 µV
0,2,x,2	1.458 µV
0,2,x,3	1.453 µV
0,2,x,4	1.448 µV
0,2,x,5	1.461 µV
0,2,x,6	1.455 µV
0,2,x,7	1.451 µV

Range 10nC, Bw 20kHz Noise 3.16nC < IR <= 10nC Spec: <= 30.000 fC Uncertainty: 2.8aC	
Chan	Value
0,1,x,0	20.941 fC
0,1,x,1	20.723 fC
0,1,x,2	20.792 fC
0,1,x,3	20.599 fC
0,1,x,4	21.153 fC
0,1,x,5	20.781 fC
0,1,x,6	20.846 fC
0,1,x,7	20.678 fC
0,2,x,0	20.792 fC
0,2,x,1	21.031 fC
0,2,x,2	20.986 fC
0,2,x,3	20.982 fC
0,2,x,4	20.799 fC
0,2,x,5	20.681 fC
0,2,x,6	20.689 fC
0,2,x,7	20.547 fC

Range 0.316nC, Bw 20kHz Noise IR <= 316pC Spec: <= 3.960 fC Uncertainty: 0.1aC	
Chan	Value
0,1,x,0	2.687 fC
0,1,x,1	2.665 fC
0,1,x,2	2.684 fC
0,1,x,3	2.677 fC
0,1,x,4	2.700 fC
0,1,x,5	2.667 fC
0,1,x,6	2.676 fC
0,1,x,7	2.689 fC
0,2,x,0	2.649 fC
0,2,x,1	2.666 fC
0,2,x,2	2.660 fC
0,2,x,3	2.677 fC
0,2,x,4	2.657 fC
0,2,x,5	2.631 fC
0,2,x,6	2.655 fC
0,2,x,7	2.682 fC

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4.5 Spurious Free Floor

Description of calibration:
Determination of the peak spurious components generated by the input channels, by internally shorting the input channels to ground. The reported values are peak values over the corresponding bandwidth.

Range 10V, Bw 80kHz Not in Scope Spec: < 40.0000µV	
Chan	Value
0,1,x,0	18.0258µV
0,1,x,1	19.7598µV
0,1,x,2	21.3127µV
0,1,x,3	20.2946µV
0,1,x,4	22.8623µV
0,1,x,5	18.4378µV
0,1,x,6	21.1810µV
0,1,x,7	20.5866µV
0,2,x,0	19.7253µV
0,2,x,1	28.9388µV
0,2,x,2	20.5672µV
0,2,x,3	19.2183µV
0,2,x,4	21.2738µV
0,2,x,5	21.8250µV
0,2,x,6	20.1144µV
0,2,x,7	19.0972µV

Range 10nC, Bw 80kHz Not in Scope Spec: < 40.0000fC	
Chan	Value
0,1,x,0	20.9669fC
0,1,x,1	19.3920fC
0,1,x,2	18.9895fC
0,1,x,3	20.6996fC
0,1,x,4	21.5149fC
0,1,x,5	22.9002fC
0,1,x,6	20.1692fC
0,1,x,7	21.2094fC
0,2,x,0	28.7950fC
0,2,x,1	18.4514fC
0,2,x,2	20.5792fC
0,2,x,3	20.2400fC
0,2,x,4	20.7207fC
0,2,x,5	22.2564fC
0,2,x,6	21.3554fC
0,2,x,7	20.5170fC

Range 10V, Bw 40kHz Not in Scope Spec: < 3.0000µV	
Chan	Value
0,1,x,0	1.4346µV
0,1,x,1	1.5138µV
0,1,x,2	1.4216µV
0,1,x,3	1.6728µV
0,1,x,4	1.6711µV
0,1,x,5	1.6846µV
0,1,x,6	1.8798µV
0,1,x,7	1.9603µV
0,2,x,0	2.1265µV
0,2,x,1	1.6921µV
0,2,x,2	2.1057µV
0,2,x,3	1.8577µV
0,2,x,4	2.3854µV
0,2,x,5	1.6558µV
0,2,x,6	1.6987µV
0,2,x,7	1.4657µV

Range 10nC, Bw 40kHz Not in Scope Spec: < 3.0000fC	
Chan	Value
0,1,x,0	1.9829fC
0,1,x,1	1.5564fC
0,1,x,2	1.8120fC
0,1,x,3	1.5570fC
0,1,x,4	1.7344fC
0,1,x,5	1.7927fC
0,1,x,6	1.7502fC
0,1,x,7	1.4902fC
0,2,x,0	1.7261fC
0,2,x,1	1.4957fC
0,2,x,2	2.3281fC
0,2,x,3	1.7758fC
0,2,x,4	1.6961fC
0,2,x,5	1.6725fC
0,2,x,6	1.4451fC
0,2,x,7	1.3794fC

Range 0.316V, Bw 80kHz Not in Scope Spec: < 1.2000µV	
Chan	Value
0,1,x,0	0.6794µV
0,1,x,1	0.6306µV
0,1,x,2	0.6120µV
0,1,x,3	0.6073µV
0,1,x,4	0.6083µV
0,1,x,5	0.6841µV
0,1,x,6	0.6372µV
0,1,x,7	0.5810µV
0,2,x,0	0.6941µV
0,2,x,1	0.5971µV
0,2,x,2	0.6532µV
0,2,x,3	0.7280µV
0,2,x,4	0.6325µV
0,2,x,5	0.6444µV
0,2,x,6	0.5478µV
0,2,x,7	0.6098µV

Range 0.316nC, Bw 80kHz Not in Scope Spec: < 1.2000fC	
Chan	Value
0,1,x,0	0.6534fC
0,1,x,1	0.6345fC
0,1,x,2	0.6020fC
0,1,x,3	0.6248fC
0,1,x,4	0.6508fC
0,1,x,5	0.6198fC
0,1,x,6	0.6614fC
0,1,x,7	0.6902fC
0,2,x,0	0.6119fC
0,2,x,1	0.7955fC
0,2,x,2	0.6187fC
0,2,x,3	0.6484fC
0,2,x,4	0.6443fC
0,2,x,5	0.6474fC
0,2,x,6	0.7112fC
0,2,x,7	0.6161fC

Range 0.316V, Bw 40kHz Not in Scope Spec: < 0.1600µV	
Chan	Value
0,1,x,0	0.0773µV
0,1,x,1	0.0815µV
0,1,x,2	0.0900µV
0,1,x,3	0.0983µV
0,1,x,4	0.0994µV
0,1,x,5	0.1014µV
0,1,x,6	0.0922µV
0,1,x,7	0.0779µV
0,2,x,0	0.0935µV
0,2,x,1	0.0926µV
0,2,x,2	0.0909µV
0,2,x,3	0.0825µV
0,2,x,4	0.0827µV
0,2,x,5	0.0897µV
0,2,x,6	0.0839µV
0,2,x,7	0.0897µV

Range 0.316nC, Bw 40kHz Not in Scope Spec: < 0.3500fC	
Chan	Value
0,1,x,0	0.1643fC
0,1,x,1	0.1682fC
0,1,x,2	0.1443fC
0,1,x,3	0.1500fC
0,1,x,4	0.1397fC
0,1,x,5	0.1534fC
0,1,x,6	0.1460fC
0,1,x,7	0.1468fC
0,2,x,0	0.1486fC
0,2,x,1	0.1466fC
0,2,x,2	0.1524fC
0,2,x,3	0.1534fC
0,2,x,4	0.1955fC
0,2,x,5	0.1347fC
0,2,x,6	0.1768fC
0,2,x,7	0.1535fC

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Range 10V, Bw 20kHz
Spurious 3.16V < IR <= 10V
Spec: <= 2.300 µV
Uncertainty: 3.4nV

Chan	Value
0,1,x,0	1.311 µV
0,1,x,1	1.266 µV
0,1,x,2	1.205 µV
0,1,x,3	1.154 µV
0,1,x,4	1.059 µV
0,1,x,5	1.175 µV
0,1,x,6	1.246 µV
0,1,x,7	1.013 µV
0,2,x,0	1.261 µV
0,2,x,1	1.269 µV
0,2,x,2	1.405 µV
0,2,x,3	1.455 µV
0,2,x,4	1.040 µV
0,2,x,5	1.149 µV
0,2,x,6	1.062 µV
0,2,x,7	0.985 µV

Range 10nC, Bw 20kHz
Spurious 3.16nC < IR <= 10nC
Spec: <= 2.500 fC
Uncertainty: 2.8aC

Chan	Value
0,1,x,0	1.535 fC
0,1,x,1	1.246 fC
0,1,x,2	1.482 fC
0,1,x,3	1.294 fC
0,1,x,4	1.304 fC
0,1,x,5	1.153 fC
0,1,x,6	1.224 fC
0,1,x,7	1.217 fC
0,2,x,0	1.041 fC
0,2,x,1	1.257 fC
0,2,x,2	1.590 fC
0,2,x,3	1.604 fC
0,2,x,4	1.120 fC
0,2,x,5	1.370 fC
0,2,x,6	1.249 fC
0,2,x,7	0.983 fC

ICP
Not in Scope
Spec: < 0.2600µVp

Chan	Value
0,1,x,0	0.0886µVp
0,1,x,1	0.0906µVp
0,1,x,2	0.0735µVp
0,1,x,3	0.0781µVp
0,1,x,4	0.0803µVp
0,1,x,5	0.0924µVp
0,1,x,6	0.0681µVp
0,1,x,7	0.0688µVp
0,2,x,0	0.0877µVp
0,2,x,1	0.0697µVp
0,2,x,2	0.0656µVp
0,2,x,3	0.0615µVp
0,2,x,4	0.0737µVp
0,2,x,5	0.0776µVp
0,2,x,6	0.0709µVp
0,2,x,7	0.0665µVp

Range 0.316V, Bw 20kHz
Spurious IR <= 316mV
Spec: <= 0.130 µV
Uncertainty: 2.0nV

Chan	Value
0,1,x,0	0.072 µV
0,1,x,1	0.064 µV
0,1,x,2	0.057 µV
0,1,x,3	0.063 µV
0,1,x,4	0.058 µV
0,1,x,5	0.056 µV
0,1,x,6	0.062 µV
0,1,x,7	0.062 µV
0,2,x,0	0.062 µV
0,2,x,1	0.078 µV
0,2,x,2	0.064 µV
0,2,x,3	0.063 µV
0,2,x,4	0.063 µV
0,2,x,5	0.060 µV
0,2,x,6	0.060 µV
0,2,x,7	0.055 µV

Range 0.316nC, Bw 20kHz
Spurious IR <= 316pC
Spec: <= 0.300 fC
Uncertainty: 0.1aC

Chan	Value
0,1,x,0	0.097 fC
0,1,x,1	0.120 fC
0,1,x,2	0.097 fC
0,1,x,3	0.120 fC
0,1,x,4	0.113 fC
0,1,x,5	0.116 fC
0,1,x,6	0.099 fC
0,1,x,7	0.106 fC
0,2,x,0	0.106 fC
0,2,x,1	0.105 fC
0,2,x,2	0.139 fC
0,2,x,3	0.105 fC
0,2,x,4	0.108 fC
0,2,x,5	0.105 fC
0,2,x,6	0.122 fC
0,2,x,7	0.114 fC

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4.6 Inter-channel Crosstalk

Description of calibration:
Determination of the crosstalk between the input channels in a system. The channel under calibration is internally shorted to ground, while its neighbour channels are fed with a near full scale sine wave signal which is generated by the internal reference generator. This is done for two input range settings of the channel under calibration, and two signal frequencies. The reported results represent the measured crosstalk values in the channels under calibration (either in Volt or Coulomb, depending on the input channel type) and the ratio between the applied signal amplitude and the crosstalk values (in dB).

Range 0.316V, F 1K5
Crosstalk 100mV < IR <= 316mV
Spec: <= -120.0dB
Uncertainty: 68nV

Chan	Value
0,1,x,0	0.135 µV, -131.4dB
0,1,x,1	0.145 µV, -130.8dB
0,1,x,2	0.124 µV, -132.1dB
0,1,x,3	0.082 µV, -135.7dB
0,1,x,4	0.131 µV, -131.6dB
0,1,x,5	0.123 µV, -132.2dB
0,1,x,6	0.136 µV, -131.3dB
0,1,x,7	0.115 µV, -132.7dB
0,2,x,0	0.093 µV, -134.6dB
0,2,x,1	0.111 µV, -133.1dB
0,2,x,2	0.070 µV, -137.1dB
0,2,x,3	0.133 µV, -131.5dB
0,2,x,4	0.093 µV, -134.6dB
0,2,x,5	0.094 µV, -134.5dB
0,2,x,6	0.114 µV, -132.8dB
0,2,x,7	0.131 µV, -131.6dB

Range 10V, F 1K5
Crosstalk 3.16V < IR <= 10V
Spec: <= -108.0dB
Uncertainty: 1.3µV

Chan	Value
0,1,x,0	0.362 µV, -122.8dB
0,1,x,1	0.317 µV, -124.0dB
0,1,x,2	0.217 µV, -127.3dB
0,1,x,3	0.498 µV, -120.0dB
0,1,x,4	0.303 µV, -124.4dB
0,1,x,5	0.562 µV, -119.0dB
0,1,x,6	0.647 µV, -117.8dB
0,1,x,7	0.821 µV, -115.7dB
0,2,x,0	0.311 µV, -124.1dB
0,2,x,1	0.422 µV, -121.5dB
0,2,x,2	0.112 µV, -133.0dB
0,2,x,3	0.698 µV, -117.1dB
0,2,x,4	0.320 µV, -123.9dB
0,2,x,5	0.548 µV, -119.2dB
0,2,x,6	0.634 µV, -117.9dB
0,2,x,7	0.676 µV, -117.4dB

Range 0.316nC, F 1K5
Crosstalk IR <= 316pC
Spec: <= -118.0dB
Uncertainty: 68aC

Chan	Value
0,1,x,0	0.172 fC, -129.3dB
0,1,x,1	0.163 fC, -129.7dB
0,1,x,2	0.164 fC, -129.7dB
0,1,x,3	0.129 fC, -131.8dB
0,1,x,4	0.171 fC, -129.3dB
0,1,x,5	0.150 fC, -130.4dB
0,1,x,6	0.191 fC, -128.4dB
0,1,x,7	0.202 fC, -127.9dB
0,2,x,0	0.186 fC, -128.6dB
0,2,x,1	0.167 fC, -129.5dB
0,2,x,2	0.192 fC, -128.3dB
0,2,x,3	0.169 fC, -129.4dB
0,2,x,4	0.197 fC, -128.1dB
0,2,x,5	0.192 fC, -128.3dB
0,2,x,6	0.227 fC, -126.9dB
0,2,x,7	0.199 fC, -128.0dB

Range 10nC, F 1K5
Crosstalk 3.16nC < IR <= 10nC
Spec: <= -109.0dB
Uncertainty: 1.3fC

Chan	Value
0,1,x,0	0.340 fC, -123.4dB
0,1,x,1	0.214 fC, -127.4dB
0,1,x,2	0.205 fC, -127.7dB
0,1,x,3	0.947 fC, -114.5dB
0,1,x,4	0.516 fC, -119.7dB
0,1,x,5	0.474 fC, -120.5dB
0,1,x,6	0.603 fC, -118.4dB
0,1,x,7	0.800 fC, -115.9dB
0,2,x,0	0.169 fC, -129.4dB
0,2,x,1	0.174 fC, -129.2dB
0,2,x,2	0.345 fC, -123.2dB
0,2,x,3	0.389 fC, -122.2dB
0,2,x,4	0.598 fC, -118.4dB
0,2,x,5	0.603 fC, -118.4dB
0,2,x,6	0.753 fC, -116.4dB
0,2,x,7	0.568 fC, -118.9dB

Range 0.316V, F 15K
Crosstalk 100mV < IR <= 316mV
Spec: <= -107.0dB
Uncertainty: 68nV

Chan	Value
0,1,x,0	0.594 µV, -118.5dB
0,1,x,1	0.961 µV, -114.3dB
0,1,x,2	0.968 µV, -114.3dB
0,1,x,3	0.775 µV, -116.2dB
0,1,x,4	0.910 µV, -114.8dB
0,1,x,5	0.932 µV, -114.6dB
0,1,x,6	0.957 µV, -114.4dB
0,1,x,7	0.883 µV, -115.1dB
0,2,x,0	0.558 µV, -119.1dB
0,2,x,1	0.932 µV, -114.6dB
0,2,x,2	0.950 µV, -114.4dB
0,2,x,3	0.794 µV, -116.0dB
0,2,x,4	0.903 µV, -114.9dB
0,2,x,5	0.906 µV, -114.8dB
0,2,x,6	0.930 µV, -114.6dB
0,2,x,7	0.881 µV, -115.1dB

Range 10V, F 15K
Crosstalk 3.16V < IR <= 10V
Spec: <= -105.0dB
Uncertainty: 1.3µV

Chan	Value
0,1,x,0	0.913 µV, -114.8dB
0,1,x,1	1.579 µV, -110.0dB
0,1,x,2	1.585 µV, -110.0dB
0,1,x,3	1.551 µV, -110.2dB
0,1,x,4	1.325 µV, -111.5dB
0,1,x,5	1.235 µV, -112.1dB
0,1,x,6	1.372 µV, -111.2dB
0,1,x,7	0.950 µV, -114.4dB
0,2,x,0	1.090 µV, -113.2dB
0,2,x,1	1.624 µV, -109.8dB
0,2,x,2	1.598 µV, -109.9dB
0,2,x,3	1.519 µV, -110.3dB
0,2,x,4	1.196 µV, -112.4dB
0,2,x,5	1.386 µV, -111.1dB
0,2,x,6	1.298 µV, -111.7dB
0,2,x,7	1.151 µV, -112.8dB

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Range 0.316nC, F 15K Crosstalk IR <= 316pC Spec: <= -118.0dB Uncertainty: 68aC	
Chan	Value
0,1,x,0	0.230 fC, -126.7dB
0,1,x,1	0.364 fC, -122.7dB
0,1,x,2	0.247 fC, -126.1dB
0,1,x,3	0.459 fC, -120.7dB
0,1,x,4	0.323 fC, -123.8dB
0,1,x,5	0.303 fC, -124.3dB
0,1,x,6	0.301 fC, -124.4dB
0,1,x,7	0.312 fC, -124.1dB
0,2,x,0	0.238 fC, -126.5dB
0,2,x,1	0.326 fC, -123.7dB
0,2,x,2	0.242 fC, -126.3dB
0,2,x,3	0.423 fC, -121.5dB
0,2,x,4	0.324 fC, -123.8dB
0,2,x,5	0.280 fC, -125.0dB
0,2,x,6	0.302 fC, -124.4dB
0,2,x,7	0.319 fC, -123.9dB

Range 10nC, F 15K Crosstalk 3.16nC < IR <= 10nC Spec: <= -109.0dB Uncertainty: 1.3fC	
Chan	Value
0,1,x,0	0.660 fC, -117.6dB
0,1,x,1	0.964 fC, -114.3dB
0,1,x,2	0.906 fC, -114.8dB
0,1,x,3	1.260 fC, -112.0dB
0,1,x,4	0.675 fC, -117.4dB
0,1,x,5	0.737 fC, -116.6dB
0,1,x,6	0.444 fC, -121.0dB
0,1,x,7	0.080 fC, -135.9dB
0,2,x,0	0.444 fC, -121.0dB
0,2,x,1	0.961 fC, -114.3dB
0,2,x,2	1.037 fC, -113.7dB
0,2,x,3	0.910 fC, -114.8dB
0,2,x,4	0.688 fC, -117.2dB
0,2,x,5	0.843 fC, -115.5dB
0,2,x,6	0.621 fC, -118.1dB
0,2,x,7	0.560 fC, -119.0dB

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4.7 Inter-channel Phase Match

Description of calibration:
Determination of the phase difference between the input channels in a system, by applying an accurate -3dBFS (max 4V) sine wave which is generated by the internal reference generator. For charge amplifiers, the reference voltage signal is translated to a reference charge signal. The reported values represent the highest phase differences found between any of the channels in the system. This is done for two input range settings and two signal frequencies.

Range 10V, F 9k9 Not in Scope Spec: < 0.3000°	
Chan	Value
0,1,x,0	0.0413°
0,1,x,1	0.0274°
0,1,x,2	0.0353°
0,1,x,3	0.0212°
0,1,x,4	0.0245°
0,1,x,5	0.0413°
0,1,x,6	0.0334°
0,1,x,7	0.0399°
0,2,x,0	0.0292°
0,2,x,1	0.0265°
0,2,x,2	0.0231°
0,2,x,3	0.0408°
0,2,x,4	0.0234°
0,2,x,5	0.0340°
0,2,x,6	0.0250°
0,2,x,7	0.0249°

Range 10nC, F 9k9 Not in Scope Spec: < 0.3000°	
Chan	Value
0,1,x,0	0.0468°
0,1,x,1	0.0256°
0,1,x,2	0.0439°
0,1,x,3	0.0285°
0,1,x,4	0.0332°
0,1,x,5	0.0392°
0,1,x,6	0.0288°
0,1,x,7	0.0468°
0,2,x,0	0.0260°
0,2,x,1	0.0354°
0,2,x,2	0.0333°
0,2,x,3	0.0332°
0,2,x,4	0.0281°
0,2,x,5	0.0341°
0,2,x,6	0.0242°
0,2,x,7	0.0245°

Range 10V, F 19k9 Not in Scope Spec: < 0.4000°	
Chan	Value
0,1,x,0	0.0836°
0,1,x,1	0.0548°
0,1,x,2	0.0714°
0,1,x,3	0.0430°
0,1,x,4	0.0491°
0,1,x,5	0.0836°
0,1,x,6	0.0671°
0,1,x,7	0.0812°
0,2,x,0	0.0594°
0,2,x,1	0.0536°
0,2,x,2	0.0472°
0,2,x,3	0.0818°
0,2,x,4	0.0472°
0,2,x,5	0.0686°
0,2,x,6	0.0501°
0,2,x,7	0.0499°

Range 10nC, F 19K9 Not in Scope Spec: < 0.4000°	
Chan	Value
0,1,x,0	0.0966°
0,1,x,1	0.0514°
0,1,x,2	0.0912°
0,1,x,3	0.0586°
0,1,x,4	0.0678°
0,1,x,5	0.0787°
0,1,x,6	0.0580°
0,1,x,7	0.0966°
0,2,x,0	0.0523°
0,2,x,1	0.0734°
0,2,x,2	0.0685°
0,2,x,3	0.0669°
0,2,x,4	0.0588°
0,2,x,5	0.0685°
0,2,x,6	0.0514°
0,2,x,7	0.0519°

Range 0.316V, F 9k9 Not in Scope Spec: < 0.3000°	
Chan	Value
0,1,x,0	0.0727°
0,1,x,1	0.1025°
0,1,x,2	0.0779°
0,1,x,3	0.1260°
0,1,x,4	0.0866°
0,1,x,5	0.1115°
0,1,x,6	0.1218°
0,1,x,7	0.1409°
0,2,x,0	0.1319°
0,2,x,1	0.1048°
0,2,x,2	0.1205°
0,2,x,3	0.0966°
0,2,x,4	0.1161°
0,2,x,5	0.0868°
0,2,x,6	0.1177°
0,2,x,7	0.1409°

Range 0.316nC, F 9k9 Not in Scope Spec: < 0.3000°	
Chan	Value
0,1,x,0	0.0749°
0,1,x,1	0.0959°
0,1,x,2	0.0732°
0,1,x,3	0.1288°
0,1,x,4	0.0787°
0,1,x,5	0.1044°
0,1,x,6	0.1127°
0,1,x,7	0.1429°
0,2,x,0	0.1429°
0,2,x,1	0.1159°
0,2,x,2	0.1330°
0,2,x,3	0.1120°
0,2,x,4	0.1231°
0,2,x,5	0.0944°
0,2,x,6	0.1277°
0,2,x,7	0.1427°

Range 0.316V, F 19k9 Not in Scope Spec: < 0.6000°	
Chan	Value
0,1,x,0	0.1434°
0,1,x,1	0.2034°
0,1,x,2	0.1531°
0,1,x,3	0.2511°
0,1,x,4	0.1719°
0,1,x,5	0.2218°
0,1,x,6	0.2419°
0,1,x,7	0.2808°
0,2,x,0	0.2633°
0,2,x,1	0.2089°
0,2,x,2	0.2412°
0,2,x,3	0.1927°
0,2,x,4	0.2317°
0,2,x,5	0.1729°
0,2,x,6	0.2355°
0,2,x,7	0.2808°

Range 0.316nC, F 19K9 Not in Scope Spec: < 0.6000°	
Chan	Value
0,1,x,0	0.1527°
0,1,x,1	0.1912°
0,1,x,2	0.1500°
0,1,x,3	0.2587°
0,1,x,4	0.1582°
0,1,x,5	0.2093°
0,1,x,6	0.2242°
0,1,x,7	0.2879°
0,2,x,0	0.2876°
0,2,x,1	0.2337°
0,2,x,2	0.2669°
0,2,x,3	0.2254°
0,2,x,4	0.2471°
0,2,x,5	0.1904°
0,2,x,6	0.2580°
0,2,x,7	0.2879°

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5.1 Gain Accuracy after Adjustment

Description of calibration:
Determination of the amplitude accuracy of the input channels over all input ranges and available ADC bandwidths, by applying an accurate 1kHz -3dBFS (max 4V) sine wave which is generated by the internal reference generator. For charge amplifiers, the reference voltage signal is translated to a reference charge signal.
The reported values represent the deviations from the expected signal amplitude, both absolute (either in Volt or Coulomb, depending on the input channel type) and relative (in %).

BW 25k6 **Alternating voltage 3.16V < IR <= 10V** **Spec: <= ±0.100%** **Uncertainty: 640µV**	
Chan	Value
0,0,x,0	0.368 mV, 0.009%
0,0,x,1	0.087 mV, 0.002%

BW 51k2 **Alternating voltage 3.16V < IR <= 10V** **Spec: <= ±0.100%** **Uncertainty: 640µV**	
Chan	Value
0,0,x,0	0.389 mV, 0.010%
0,0,x,1	0.255 mV, 0.006%

BW 102k4 **Not in Scope** **Spec: 1.00000 ±0.10%**	
Chan	Value
0,0,x,0	1.00006, 0.01%
0,0,x,1	1.00003, 0.00%

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End of Report