

INFORME DE INSPECCIÓN DE VIBRACIONES AMBIENTALES

PROYECTO: “JAGUITO GREEN ENERGY III”

FECHA: 14 DE JUNIO DE 2024

TIPO DE PROYECTO: CONSTRUCCIÓN

CLASIFICACIÓN: INSPECCIÓN DE VIBRACIONES AMBIENTALES

IDENTIFICACIÓN DEL INFORME: 24-32-228-RJ-02-LMA-V1.1



APROBADO POR:
ING. INDUSTRIAL ALIS SAMANIEGO

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1. INFORMACIÓN GENERAL

1.1 Tipo de Servicio: Inspección De Vibraciones Ambientales

1.2 Identificación de la aprobación del servicio: 24-228-RJ-02-LMA-V1.1

1.3 Datos de la Empresa Contratante

Nombre del Proyecto	JAGUITO GREEN ENERGY III
Fecha de la inspección	14 DE JUNIO DE 2024
Contacto en Proyecto	RAÚL JAÉN
Localización del proyecto	EL JAGUITO, CORREGIMIENTO DE EL ROBLE, DISTRITO DE AGUADULCE, PROVINCIA DE COCLÉ
Coordenadas	PUNTO 1 – 904626 N, 534066 E

1.4 Descripción del trabajo de Inspección

La inspección de vibración ambiental se efectuó el 14 de junio de 2024 en horario diurno, a partir de las 4:50 p.m., en el Corregimiento de El Roble, Distrito de Aguadulce, Provincia de Coclé.

La descripción cualitativa durante la medición corresponde a: Día nublado. Humedad Relativa: 68.3 %RH, Velocidad del Viento: 1.9 km/h, Temperatura: 29.0 °C.

2. OBJETIVO DE LA MEDICIÓN

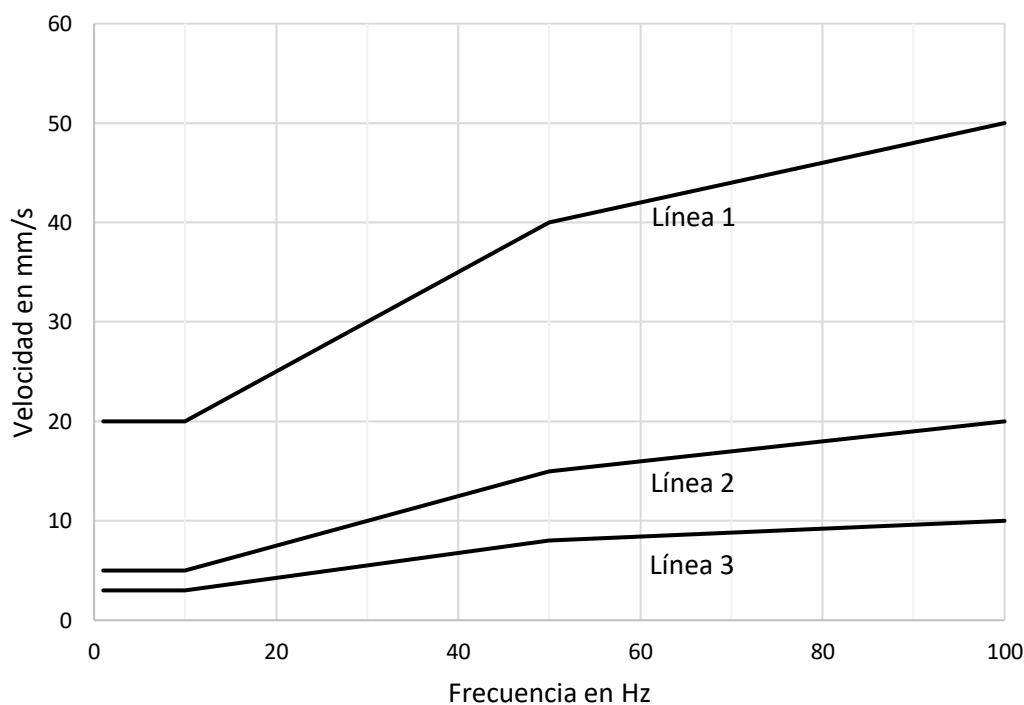
El objetivo de la medición de los niveles de exposición de vibraciones ambientales de acuerdo a la norma ISO 4866:2010 -Vibraciones Ambientales.

3. NORMA APLICABLE

Actualmente, nuestro país no dispone de una norma nacional que estipule los valores límites de vibración a los cuales pueden estar sometidas las edificaciones; por lo que, los resultados obtenidos en campo mediante el método ISO 4866:2010 se compararan con la norma internacional de referencia DIN 4150-2:1999, Vibrations in buildings.

Tabla 1: Valores máximos de vibración para la evaluación de los efectos de vibraciones de corta duración en estructuras

Línea	Tipo de estructura	Valores máximos v, en mm/s			
		Vibración en la cimentación			Vibración horizontal en la planta más alta
		1 – 10 Hz	10 – 50 Hz	50 – 100 Hz	Todas las frecuencias
1	Edificios para uso comercial, industrial o diseños similares	20	20 – 40	40 – 50	40
2	Edificios asimilables a viviendas	5	5 – 15	15 – 20	15
3	Estructuras que por su particular sensibilidad a la vibración no pueden ser clasificadas en la línea 1 y 2 (Ej. Edificios históricos)	3	3 – 8	8 – 10	8



4. INSTRUMENTO UTILIZADO

Instrumento utilizado	Analizador de Vibraciones SVANTEK
Modelo	SVAN 958A
Serie del equipo	99102
Acelerómetro Ambiental triaxial	SA207B Building Vibration Measurement set (SV 84 Outdoor accelerometer, mounting adapter with special levelling system SENSOR TRIAXIAL SV84
Fecha de calibración	14 DE JULIO DE 2023
Norma de fabricación	ISO 8041:2005 / ANSI S2.70 / IEC 61260:2014 / ANSI S1.

5. RESULTADO DE LA INSPECCIÓN

PUNTO 1

CARACTERIZACIÓN DEL PUNTO DE INSPECCIÓN			
RANGO DE FRECUENCIAS	1 – 100 Hz	TIPO DE INSPECCIÓN: LÍNEA BASE_SI_	
RESULTADOS EN: mm/s mm edificios		SEGUIMIENTO ____ REQUISITO LEGAL ____	
VERIFICACIÓN DE FUNCIONAMIENTO DEL EQUIPO		QUEJAS ____	
Verificado: xx		POSICIÓN DEL TRNSDUCTOR:	SUELO ☒ SI PARED ☐
CONDICIONES CLIMÁTICAS		COORDENADAS UTM	
HUMEDAD	68.3 %RH	NORTE	904426
VELOCIDAD DEL VIENTO	1.9 Km/h	ESTE	534066
TEMPERATURA	29.0 °C	Nº PUNTO	1
PRESIÓN BAROMÉTRICA	-		
TIPO DE INSPECCIÓN		ESTRUCTURAL	
TIPO DE ESTRUCTURA		TERRENO	
Línea 1. Edificios para uso comercial, industrial o diseños similares Línea 2. Edificios asimilables a viviendas Línea 3. Estructuras que por su particular sensibilidad a la vibración no pueden ser clasificados en la línea 1 y 2. PROYECTO POR DESARROLLAR SE IDENTIFICA COMO LÍNEA 1			
(DIN 4150) $f_n = 10/n$ Hz -Edf de 1-2 pisos = 15 Hz / Edificaciones de 2-6 pisos= 8 Hz-12hz /Edificaciones de más de 6 pisos < 8 Hz			
DISTANCIA DE LA FUENTE AL RECEPTOR		5 METROS	



RESULTADOS

DESCRIPCIÓN DE LA FUENTE DE VIBRACIONES

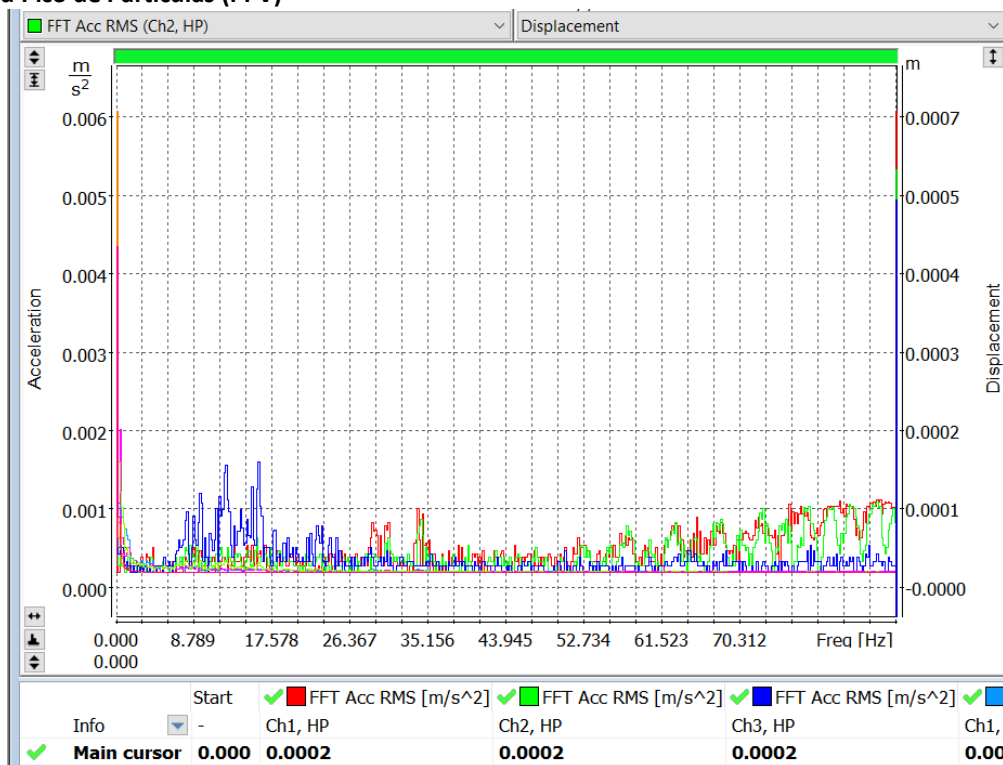
Tipo de Actividad	Voladuras	NA	Uso de Barrenadoras / perforadoras / tuneladoras	NA	Otros
	Hincado de Pilotes	NA	Equipo de compactación: Aplanadoras, rolas, piña etc.	NA	LINEA BASE
	Uso extensivo de Equipo Pesado	NA	Excavaciones o fundaciones profundas	NA	

DURACIÓN: MIENTRAS DURE LA CONSTRUCCIÓN DEL PROYECTO

Si la inspección corresponde a la línea base antes de iniciar el proyecto. Describir condiciones generales de posibles fuentes cotidianas de generación de vibraciones. TRÁFICO VEHICULAR DEL ÁREA

VALORES REGISTRADOS

Velocidad Pico de Partículas (PPV)



6. INTERPRETACIÓN

De acuerdo a la Norma aplicable DIN4150, según la estructura inspeccionada el valor máximo de velocidad para un rango de frecuencia de 1 a 10 Hz debe ser igual o inferior a 20 mm/s y el valor registrado es de 3 mm/s; para el rango de frecuencia comprendido entre 10 y 50 Hz el valor de velocidad debe estar por debajo o entre los 20 y 40 mm/s, el valor máximo registrado fue de 0.03 mm/s y para las frecuencias entre 50 a 100 Hz el valor de velocidad máximo debe estar por debajo o entre 40 y 50 mm/s y el máximo registrado fue de 0.002 mm/s.

Línea	Tipo de estructura	Valores máximos v, en mm/s			
		Vibración en la cimentación			Vibración horizontal en la planta más alta
		1 – 10 Hz	10 – 50 Hz	50 – 100 Hz	Todas las frecuencias
Línea 1	Edificios para uso comercial, industrial o diseños similares	20	20-40	40-50	40
Resultados	Punto 1	Canal 1			
		2	0.07	0.002	N.A.

7. INSPECTOR ENCARGADO DE LA INSPECCIÓN

NOMBRE: MARCOS RÍOS

CEDULA: 4-143-429

Inspector subcontratado



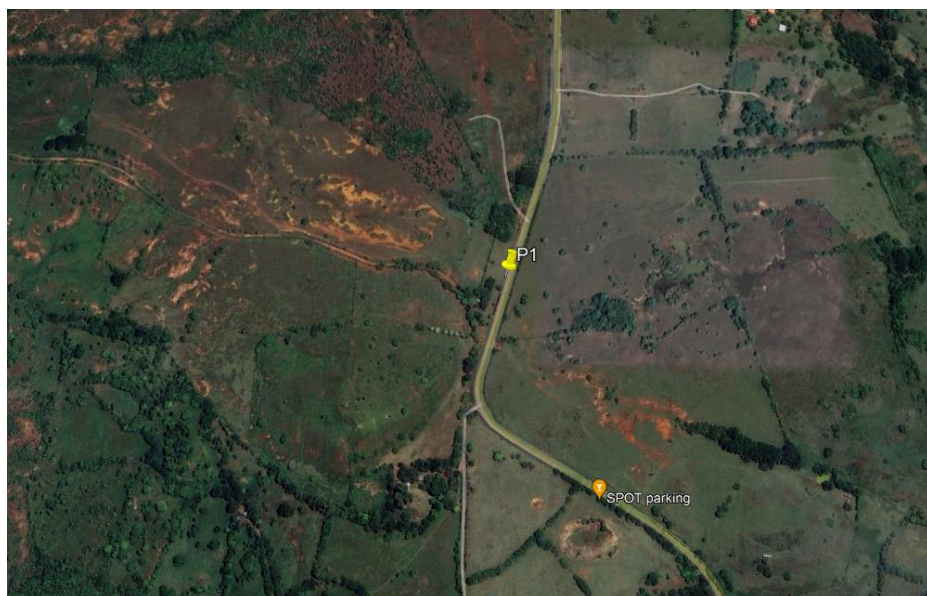
8. ANEXOS

- Registro Fotográfico de la inspección
- Ubicación del proyecto
- Equipo utilizado
- Certificado de calibración

REGISTRO FOTOGRÁFICO DE LA INSPECCIÓN



UBICACIÓN DEL PROYECTO



**EL JAGUITO, CORREGIMIENTO DE EL ROBLE, DISTRITO DE AGUADULCE,
PROVINCIA DE COCLÉ
PUNTO 1 – 904626 N, 534066 E**

EQUIPO UTILIZADO



SVAN 958A instrument with the SV 207B building vibration kit

Vibration Level Meter & Analyser

Standards	ISO 8041:2005, ISO 10816-1
Meter Mode	RMS, VDV, MTVV or Max, Peak, Peak-Peak
Analyser (option)	Simultaneous measurement in up to four channels with independent set of filters and detector constants
	1/1 octave real-time analysis, 15 filters with centre frequencies from 1 Hz to 16 kHz (class 1, IEC 61260)
	1/3 octave real-time analysis, 45 filters with centre frequencies from 0.8 Hz to 20 kHz (class 1, IEC 61260)
	FFT analysis up to 1600 lines with Hanning, Kaiser-Bessel or Flat Top window
	FFT cross spectra measurements
	RPM rotation speed measurements parallel to the vibration measurement (1 ÷ 99999) and more...
Filters	W _d , W _k , W _c , W _j , W _m , W _p , W _g (ISO 2631), W _h (ISO 5349), HP1, HP3, HP10, Vel1, Vel3, Vel10, VelMF, Di11, Di13, Di110, KB (DIN 4150)
RMS & RMQ Detectors	Digital true RMS & RMQ detectors with Peak detection, resolution 0.1 dB Time constants: from 100 ms to 10 s
Accelerometer (option)	SV 84 triaxial high sensitivity accelerometer for ground or building vibration measurements (1 V/g) SV 38 low-cost triaxial accelerometers for whole-body measurements (1 V/g MEMS type)
Measurement Range	Accelerometer dependent (with SV 84: 0.0005 ms ⁻² RMS ÷ 50 ms ⁻² PEAK)
Frequency Range	0.5 Hz ÷ 20 kHz; accelerometer dependent

CERTIFICADO DE CALIBRACIÓN



ISO9001 certified

FACTORY CALIBRATION DATA OF THE SVAN 958 No. 99102

SOUND LEVEL METER

1. CALIBRATION (electrical)

LEVEL METER; Filter: LIN; Input signal = 114.0dB, $f_m = 1\text{kHz}$

	Range 105dB		Range 130dB	
	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]
Channel 1	113.92	-0.08	113.99	-0.01
Channel 2	113.92	-0.08	113.99	-0.01
Channel 3	113.92	-0.08	113.99	-0.01
Channel 4	113.92	-0.08	113.99	-0.01

2. CALIBRATION* (acoustical)

LEVEL METER; Range: 130 dB; Reference frequency: 1000Hz;

Filter	LIN		A		C	
	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]
Channel 1	113.9	-0.1	113.9	-0.1	113.9	-0.1
Channel 2	113.9	-0.1	113.9	-0.1	113.9	-0.1
Channel 3	113.9	-0.1	113.9	-0.1	113.9	-0.1
Channel 4	113.9	-0.1	113.9	-0.1	113.9	-0.1

Calibration measured with the microphone SVANTEK type SV22 No. 4013604. Calibration factor: -0.4dB

3. LINEARITY TEST* (electrical)

LEVEL METER; Range: 105 dB; Filter: A; $f_m = 1000\text{ Hz}$

	Input [dB]	24.0	30.0	40.0	60.0	80.0	100.0	114.0
Channel 1	Error [dB]	0.20	0.08	0.01	-0.01	0.01	0.01	0.01
Channel 2	Error [dB]	0.19	0.07	0.01	-0.01	0.01	0.02	0.01
Channel 3	Error [dB]	0.11	0.03	0.00	-0.02	0.00	0.01	0.00
Channel 4	Error [dB]	0.08	0.03	0.00	-0.01	0.01	0.02	0.01

LEVEL METER; Range: 130 dB; Filter: A; $f_m = 1000\text{ Hz}$

	Input [dB]	45.0	50.0	60.0	80.0	100.0	120.0	135.0
Channel 1	Error [dB]	0.09	0.07	0.02	0.01	0.01	0.00	0.01
Channel 2	Error [dB]	0.13	0.09	0.02	0.01	0.01	0.00	0.01
Channel 3	Error [dB]	0.10	0.09	0.02	0.00	0.01	0.00	0.01
Channel 4	Error [dB]	0.11	0.07	0.02	0.01	0.01	-0.00	0.01

1/3 OCTAVE (1kHz); Range: 130 dB; Filter: A; $f_m = 1000\text{ Hz}$

	Input [dB]	35.0	40.0	60.0	80.0	100.0	120.0	135.0
Channel 1	Error [dB]	0.31	0.10	0.04	0.00	0.00	-0.01	0.00
Channel 2	Error [dB]	0.30	0.09	0.04	0.00	0.01	0.00	0.00
Channel 3	Error [dB]	0.23	0.11	0.04	0.00	0.01	0.00	-0.00
Channel 4	Error [dB]	0.27	0.05	0.03	-0.00	0.01	-0.00	0.00

4. TONEBURST RESPONSE* (electrical)

LEVEL METER; Characteristic: A; $f_{sin} = 4000$ Hz; Burst duration: 2s;

Range: **105dB**; Equivalent input steady level = 112dB

Result	Detector	Ch.	Duration [ms]	1000	500	200	100	50	20	10	5	2	1	0.5	0.25
MAX	Fast	1	Indication [dB]	112.0	111.9	111.0	109.4	107.2	103.7	100.8	97.9	94.0	91.0	87.9	84.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	0.0	-0.1	0.0	-0.0	-0.0	-0.1	-0.1
		2	Indication [dB]	112.0	111.9	111.0	109.4	107.2	103.7	100.8	97.9	94.0	90.9	87.9	84.8
			Error [dB]	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.1	0.0	-0.0	-0.1	-0.1	-0.1
		3	Indication [dB]	112.0	111.9	111.0	109.4	107.1	103.7	100.8	97.9	93.9	90.9	87.9	84.8
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.1	-0.1
		4	Indication [dB]	112.0	111.9	111.0	109.4	107.2	103.7	100.8	97.9	94.0	90.9	87.9	84.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.1	0.0	-0.0	-0.1	-0.1	-0.1
	Slow	1	Indication [dB]	110.0	108.0	104.6	101.8	98.9	95.0	92.0	89.0	85.0	-	-	-
			Error [dB]	0.0	0.1	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		2	Indication [dB]	110.0	107.9	104.6	101.8	98.9	94.9	92.0	88.9	85.0	-	-	-
			Error [dB]	0.0	0.1	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		3	Indication [dB]	110.0	107.9	104.5	101.7	98.8	94.9	91.9	88.9	84.9	-	-	-
			Error [dB]	0.0	0.1	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		4	Indication [dB]	110.0	108.0	104.6	101.8	98.9	95.0	92.0	89.0	85.0	-	-	-
			Error [dB]	0.0	0.1	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
SEL	-	1	Indication [dB]	112.0	109.0	105.0	102.0	99.0	95.0	92.0	89.0	85.0	82.0	78.9	75.9
			Error [dB]	0.0	-0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.1
		2	Indication [dB]	112.0	109.0	105.0	102.0	99.0	95.0	92.0	89.0	85.0	81.9	78.9	75.8
			Error [dB]	0.0	-0.0	0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.1	-0.1
		3	Indication [dB]	112.0	109.0	105.0	102.0	99.0	95.0	92.0	88.9	84.9	81.9	78.9	75.8
			Error [dB]	0.0	-0.0	0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.1	-0.1
		4	Indication [dB]	112.0	109.0	105.0	102.0	99.0	95.0	92.0	89.0	85.0	82.0	78.9	75.9
			Error [dB]	0.0	-0.0	0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.1	-0.1

Range: **105dB**; Equivalent input steady level = 52dB

Result	Detector	Ch.	Duration [ms]	1000	500	200	100	50	20	10	5
MAX	Fast	1	Indication [dB]	52.0	51.9	51.0	49.4	47.2	43.7	40.8	37.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	0.0	-0.0	0.0
		2	Indication [dB]	52.0	51.9	51.0	49.3	47.1	43.6	40.8	37.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	0.0
		3	Indication [dB]	51.9	51.9	51.0	49.3	47.1	43.6	40.8	37.9
			Error [dB]	-0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	0.0
		4	Indication [dB]	52.0	51.9	51.0	49.4	47.1	43.6	40.8	37.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.0
	Slow	1	Indication [dB]	50.0	47.9	44.6	41.8	38.9	35.0	32.0	29.0
			Error [dB]	0.0	0.1	-0.0	0.0	0.0	0.0	0.0	0.0
		2	Indication [dB]	50.0	47.9	44.5	41.7	38.8	34.9	32.0	29.0
			Error [dB]	0.0	0.1	-0.0	-0.0	0.0	-0.0	0.1	0.1
		3	Indication [dB]	49.9	47.9	44.5	41.7	38.8	34.9	31.9	29.1
			Error [dB]	0.0	0.1	-0.0	-0.0	-0.0	-0.0	0.0	0.1
		4	Indication [dB]	50.0	47.9	44.5	41.8	38.9	34.9	32.0	29.0
			Error [dB]	0.0	0.1	-0.0	-0.0	-0.0	-0.0	0.0	0.0
SEL	-	1	Indication [dB]	52.0	49.0	45.0	42.0	39.0	35.0	32.0	29.1
			Error [dB]	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
		2	Indication [dB]	52.0	48.9	45.0	42.0	39.0	35.0	32.0	29.1
			Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
		3	Indication [dB]	51.9	48.9	44.9	41.9	38.9	35.0	32.0	29.1
			Error [dB]	-0.0	-0.0	0.0	0.0	-0.0	0.0	0.1	0.1
		4	Indication [dB]	52.0	49.0	45.0	42.0	39.0	35.0	32.0	29.1
			Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1

Range: 105dB; Equivalent input steady level = 34dB

Result	Detector	Ch.	Duration [ms]	1000	500
MAX	Fast	1	Indication [dB]	34.0	34.0
			Error [dB]	0.0	0.0
		2	Indication [dB]	34.1	34.0
			Error [dB]	0.1	0.1
		3	Indication [dB]	33.9	33.9
			Error [dB]	-0.0	-0.0
		4	Indication [dB]	34.0	33.9
			Error [dB]	0.0	0.0
	Slow	1	Indication [dB]	32.0	30.1
			Error [dB]	0.0	0.1
		2	Indication [dB]	32.1	30.0
			Error [dB]	0.1	0.1
		3	Indication [dB]	32.0	29.9
			Error [dB]	0.0	0.0
		4	Indication [dB]	32.0	30.0
			Error [dB]	-0.0	0.1
SEL	-	1	Indication [dB]	34.0	31.1
			Error [dB]	0.0	0.1
		2	Indication [dB]	34.1	31.1
			Error [dB]	0.1	0.1
		3	Indication [dB]	34.0	31.0
			Error [dB]	-0.0	0.0
		4	Indication [dB]	34.0	31.1
			Error [dB]	0.0	0.1

Range: 130dB; Equivalent input steady level = 134dB

Result	Detector	Ch.	Duration [ms]	1000	500	200	100	50	20	10	5	2	1	0.5	0.25
MAX	Fast	1	Indication [dB]	134.0	133.9	133.0	131.4	129.2	125.7	122.8	119.9	116.0	113.0	109.9	106.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.1	0.0	-0.0	-0.0	-0.1	-0.1
		2	Indication [dB]	134.0	133.9	133.0	131.4	129.2	125.7	122.8	119.9	115.9	112.9	109.9	106.8
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.1	0.0	-0.0	-0.0	-0.1	-0.1
		3	Indication [dB]	133.9	133.9	133.0	131.4	129.1	125.6	122.8	119.9	115.9	112.9	109.8	106.8
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.1	-0.1
		4	Indication [dB]	134.0	133.9	133.0	131.4	129.2	125.7	122.8	119.9	116.0	112.9	109.9	106.9
			Error [dB]	0.0	0.0	0.0	0.0	129.2	-0.0	-0.1	0.0	-0.0	-0.1	-0.1	-0.1
	Slow	1	Indication [dB]	132.0	129.9	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		2	Indication [dB]	132.0	129.9	126.6	123.8	120.8	116.9	113.9	110.9	107.0	-	-	-
			Error [dB]	0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		3	Indication [dB]	132.0	129.9	126.5	123.7	120.8	116.9	113.9	110.9	106.9	-	-	-
			Error [dB]	0.0	0.1	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
		4	Indication [dB]	132.0	129.9	126.6	123.8	120.9	117.0	114.0	111.0	107.0	-	-	-
			Error [dB]	0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-0.0	-	-	-
SEL	-	1	Indication [dB]	134.0	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	104.0	100.9	97.9
			Error [dB]	0.0	-0.0	0.0	0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.1	-0.1
		2	Indication [dB]	134.0	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	103.9	100.9	97.8
			Error [dB]	0.0	-0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.1
		3	Indication [dB]	133.9	130.9	127.0	124.0	120.9	117.0	114.0	110.9	106.9	103.9	100.8	97.8
			Error [dB]	0.0	-0.0	0.0	0.0	-0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.1
		4	Indication [dB]	134.0	131.0	127.0	124.0	121.0	117.0	114.0	111.0	107.0	103.9	100.9	97.9
			Error [dB]	0.0	-0.0	0.0	-0.0	-0.0	0.0	-0.0	-0.0	-0.0	-0.1	-0.1	-0.1

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Range: **130dB**; Equivalent input steady level = 74dB

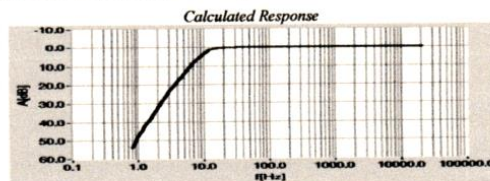
Result	Detector	Ch.	Duration [ms]	1000	500	200	100	50	20	10	5
MAX	Fast	1	Indication [dB]	74.0	73.9	73.0	71.4	69.2	65.7	62.9	59.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	0.0	-0.0	0.0
		2	Indication [dB]	74.0	73.9	73.0	71.4	69.1	65.6	62.8	59.9
			Error [dB]	0.0	0.0	73.0	0.0	-0.0	-0.0	-0.0	0.0
		3	Indication [dB]	73.9	73.8	73.0	71.3	69.1	65.6	62.8	59.9
			Error [dB]	0.0	0.0	0.0	0.0	-0.0	-0.0	-0.1	0.0
		4	Indication [dB]	74.0	73.9	73.0	71.4	69.1	65.7	62.8	59.9
			Error [dB]	0.0	0.0	0.0	-0.0	-0.0	-0.0	-0.1	0.0
	Slow	1	Indication [dB]	72.0	69.9	66.6	63.8	60.9	57.0	54.0	51.0
			Error [dB]	0.0	0.1	-0.0	-0.0	-0.0	-0.0	0.0	0.0
		2	Indication [dB]	72.0	69.9	66.5	63.7	60.8	57.0	54.0	51.0
			Error [dB]	0.0	0.1	-0.0	-0.0	-0.0	0.0	-0.0	0.1
		3	Indication [dB]	72.0	69.9	66.5	63.7	60.8	56.9	53.9	51.0
			Error [dB]	0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
		4	Indication [dB]	72.0	69.9	66.6	63.8	60.8	57.0	54.0	51.0
			Error [dB]	0.0	0.0	-0.0	-0.0	-0.0	-0.0	-0.0	0.0
SEL	-	1	Indication [dB]	74.0	71.0	67.0	64.0	61.0	57.0	54.0	51.1
			Error [dB]	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
		2	Indication [dB]	74.0	71.0	67.0	64.0	61.0	57.0	54.0	51.0
			Error [dB]	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.1
		3	Indication [dB]	73.9	70.9	66.9	63.9	60.9	57.0	53.9	51.0
			Error [dB]	0.0	-0.0	0.0	0.0	0.0	0.0	0.0	0.1
		4	Indication [dB]	74.0	71.0	67.0	64.0	61.0	57.0	54.0	51.1
			Error [dB]	0.0	-0.0	0.0	-0.0	-0.0	0.0	0.0	0.1

Range: **130dB**; Equivalent input steady level = 54dB

Result	Detector	Ch.	Duration [ms]	1000	500
MAX	Fast	1	Indication [dB]	54.1	54.0
			Error [dB]	0.1	0.1
		2	Indication [dB]	54.0	54.0
			Error [dB]	0.0	0.1
		3	Indication [dB]	53.9	53.8
			Error [dB]	-0.0	-0.0
		4	Indication [dB]	54.0	53.9
			Error [dB]	-0.0	-0.0
	Slow	1	Indication [dB]	52.1	50.0
			Error [dB]	0.1	0.1
		2	Indication [dB]	52.1	50.0
			Error [dB]	0.1	0.1
		3	Indication [dB]	51.9	49.9
			Error [dB]	-0.0	0.0
		4	Indication [dB]	52.0	49.9
			Error [dB]	-0.0	0.0
SEL	-	1	Indication [dB]	54.1	51.1
			Error [dB]	0.1	0.1
		2	Indication [dB]	54.0	51.1
			Error [dB]	0.0	0.1
		3	Indication [dB]	53.9	51.0
			Error [dB]	-0.0	0.0
		4	Indication [dB]	54.0	51.0
			Error [dB]	-0.0	0.0

5. FREQUENCY RESPONSE (electrical)

LEVEL METER; Filter: Z; Range: 130 dB; Input signal =135 dB;



Measured Response with Preamplifier SV12 (f-frequency, An-attenuation in channel n)

f [Hz]	A1[dB]	A2[dB]	A3[dB]	A4[dB]	f [Hz]	A1[dB]	A2[dB]	A3[dB]	A4[dB]
10	3.2	3.2	3.2	3.2	250	0.0	0.0	0.0	0.0
12.5	1.4	1.4	1.4	1.4	500	0.0	0.0	0.0	0.0
16	0.5	0.5	0.5	0.5	1000	0.0	0.0	0.0	0.0
20	0.1	0.1	0.1	0.1	2000	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	4000	0.0	0.0	0.0	0.0
31.5	-0.0	-0.0	-0.0	-0.0	8000	0.0	0.0	0.0	0.0
63	0.0	-0.0	-0.0	-0.0	16000	0.0	0.0	0.0	0.0
125	0.0	0.0	0.0	0.0	20000	0.0	0.0	0.0	0.0

All frequencies are nominal center values for the 1/3 octave bands

6. INTERNAL NOISE LEVEL* (electrical)

LEVEL METER; Range: 105 dB; Back-light – off; Calibration factor: 0dB

Filter	Z	A	C
Channel 1	Level [dB]	18.6	13.4
Channel 2	Level [dB]	17.7	12.9
Channel 3	Level [dB]	18.8	12.1
Channel 4	Level [dB]	16.9	13.8

* measured with preamplifier SVANTEK type SV12 No. 1771.

VIBRATION LEVEL METER

1. CALIBRATION (electrical)

LEVEL METER; Filter: HP10; Input signal =140.0dB (10.0 m/s²), f_{cal}=79.6Hz

	Range 145dB		Range 170dB	
	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]
Channel 1	139.92	-0.08	140.00	0.00
Channel 2	139.93	-0.07	140.00	0.00
Channel 3	139.92	-0.08	140.00	0.00
Channel 4	139.92	-0.08	140.00	0.00

2. CALIBRATION (vibrational)

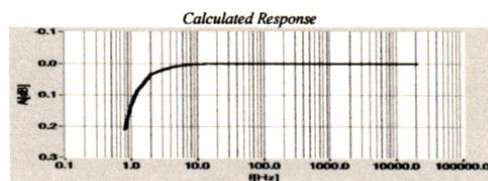
LEVEL METER; Range: 145dB;

Filter	HP1		HP10		Wd		Wm		Wh	
	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]	Indication [dB]	Error [dB]
Channel 1	139.8	-0.2	139.8	-0.2	125.9	-0.2	102.1	0.0	110.6	0.1
Channel 2	139.8	-0.2	139.8	-0.2	125.9	-0.2	102.1	0.1	110.7	0.1
Channel 3	139.8	-0.2	139.8	-0.2	125.9	-0.2	102.1	0.1	110.6	0.1
Channel 4	139.8	-0.2	139.8	-0.2	125.9	-0.2	102.1	0.1	110.7	0.1

Calibration measured with the accelerometer DYTRAN type 3185D No. 2975.

3. FREQUENCY RESPONSE (electrical)

1/3 OCTAVE; Filter: HP; Range: 170 dB; input=175 dB;



Measured Response (f-frequency, An-attenuation in channel n)

f [Hz]	A1[dB]	A2[dB]	A3[dB]	A4[dB]	f [Hz]	A1[dB]	A2[dB]	A3[dB]	A4[dB]	f [Hz]	A1[dB]	A2[dB]	A3[dB]	A4[dB]
0.8	0.18	0.19	0.18	0.18	5	0.00	0.01	0.00	0.00	500	0.00	0.00	0.00	-0.01
1	0.11	0.12	0.11	0.11	6.3	0.00	0.01	0.00	0.00	1000	0.00	0.01	0.00	0.00
1.25	0.08	0.08	0.08	0.07	8	0.00	0.01	0.01	0.00	2000	0.00	0.01	0.00	0.00
1.6	0.06	0.06	0.06	0.06	16	-0.01	-0.01	-0.01	-0.02	4000	0.01	0.02	0.02	0.01
2	0.04	0.04	0.04	0.03	31.5	0.00	0.01	0.01	0.00	8000	0.04	0.04	0.04	0.03
2.5	0.01	0.02	0.01	0.01	63	0.00	0.01	0.00	0.00	16000	0.02	0.03	0.04	0.01
3.15	0.00	0.00	0.00	0.00	125	0.00	0.00	0.00	-0.01	20000	0.02	0.03	0.04	0.00
4	0.01	0.02	0.01	0.01	250	0.00	0.00	0.00	-0.01					

All frequencies are nominal center values for the 1/3 octave bands

4. INTERNAL NOISE LEVEL (electrical)

LEVEL METER func.; Range: 145 dB; Back-light – off

	Filter	HP1	HP10	Wd	Wm	Wh
Channel 1	Indication [dB]	55.5	53.6	42.5	37.7	36.0
Channel 2	Indication [dB]	54.8	52.4	42.4	37.4	36.1
Channel 3	Indication [dB]	55.3	52.9	42.3	37.6	36.5
Channel 4	Indication [dB]	54.0	51.2	42.6	37.8	36.4

ENVIRONMENTAL CONDITIONS

Temperature	Relative humidity	Ambient pressure
23 °C	34 %	995 hPa

TEST EQUIPMENT

Item	Manufacturer	Model	Serial no.	Description
1.	SVANTEK	SVAN 401	84	Signal generator
2.	SVANTEK	SVAN 912A	15900	Sound & Vibration Analyser
3.	RIGOL	DM3068	DM30155100773	Digital multimeter
4.	SVANTEK	SV30A	24563	Acoustic calibrator
5.	SVANTEK	ST02	-	Microphone equivalent electrical impedance (18pF)
6.	DYTRAN	3233A	747	Reference accelerometer

CONFORMITY & TEST DECLARATION

- Herewith Svantek company declares that this instrument has been calibrated and tested in compliance with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass them.
- Traceability of the calibration is guaranteed by the above mentioned ISO9001 procedures.
- The information appearing on this sheet has been compiled specifically for this instrument. This form is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
- This calibration sheet shall not be reproduced except in full, without written permission of the SVANTEK Ltd.

Calibration specialist: Krzysztof Kubel

Test date: 2024-07-14

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