

Appendix 7-7

Manufacturer Sound Level Data Sheets

**Acoustic Test Center, Qingdao Branch, Institute of Acoustics,
Chinese Academy of Sciences
Test Report (Continuation Sheet)**

Test Condition

1. The PV Grid-Connected Inverter (SG3600UD-MV) is combined by inverter and transformer, sample ATC210014(1) is the transformer, and sample ATC210014(2) is the inverter, they are measured separately;
2. Reference box of the transformer: $l_1=2000$, $l_2=1940$ mm, $l_3=2600$ mm, and the measurement distance $d=1300$ mm, 12 microphone positions are used as shown in Fig.1 according to Annex C in the ISO 3746-2010, and the measurement surface area $S_1 = 92.2\text{m}^2$;
3. The Transformer is test in a silent room, and its low voltage side was connected to 660V-60Hz power supply(transformer is in no-load state);
4. Reference box of the inverter: $l_1=2200$ mm, $l_2=1500$ mm, $l_3=2400$ mm, the measurement distance $d=1300$ mm, 12 microphone positions are used as shown in Fig.2 according to Annex C in the ISO 3746-2010, and the measurement surface area $S_2 = 85.5\text{m}^2$;
5. The inverter is test in a industrial room and is set to the full load state ;
6. Each microphone position is tested for 30s;
7. The main equipment for testing is shown in Table 1;
8. The microphone was field calibrated before and after the measurements to verify accuracy of the measurements.

Table 1 Main equipment for test

Name	Type\Serial Number	Validity
Sound Calibrator	B&K Type 4231\2725159	2021-09-01
Data Acquisition System	B&K Type 3050-A-060\3050-105837	2021-09-02
Microphone	GRAS 46AE\270180	2021-09-01
Microphone	GRAS 46AE\270292	2021-09-01
Microphone	GRAS 46AE\270293	2021-09-01
Microphone	GRAS 46AE\270299	2021-09-01

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Test Result

Table 2 Calculated Transformer Sound Power Level for 1/1 Octave Bands

Item	Sound Levels at Octave Band Center Frequencies (dB)									Overall Sound Power	
	31.5	63	125	250	500	1000	2000	4000	8000	(dBA)	(dB)
Transformer	<u>67.8</u>	<u>60.5</u>	70.3	72.4	63.5	55.8	<u>43.1</u>	<u>34.1</u>	<u>29.3</u>	65.8	74.5

Table 3: Calculated Transformer Sound Power Level for 1/3 Octave Bands

1/3 Octave Band Center Frequencies/Hz	Sound Power level/dB	1/3 Octave Band Center Frequencies/Hz	Sound Power level/dB
20	<u>62.4</u>	500	58.9
25	<u>66.7</u>	630	55.7
31.5	<u>60.3</u>	800	54.2
40	<u>55.9</u>	1000	48.8
50	<u>57.4</u>	1250	45.2
63	<u>55.3</u>	1600	41.5
80	<u>53.7</u>	2000	<u>37.6</u>
100	58.1	2500	<u>33.7</u>
125	70.3	3150	<u>30.9</u>
160	<u>55.3</u>	4000	<u>28.8</u>
200	<u>57.1</u>	5000	<u>27.6</u>
250	72.1	6300	<u>26.3</u>
315	56.7	8000	<u>23.9</u>
400	59.6	10000	<u>22.6</u>

Note: The underlined data represent upper bounds to the sound power level of the noise source under test.

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Test Result

Table 4 Calculated Inverter Sound Power Level for 1/1 Octave Bands

Item	Sound Levels at Octave Band Center Frequencies (dB)									Overall Sound Power	
	31.5	63	125	250	500	1000	2000	4000	8000	(dBA)	(dB)
Inverter	85.5	85.3	86.6	85.9	90.1	81.0	80.3	88.1	80.6	91.9	95.7

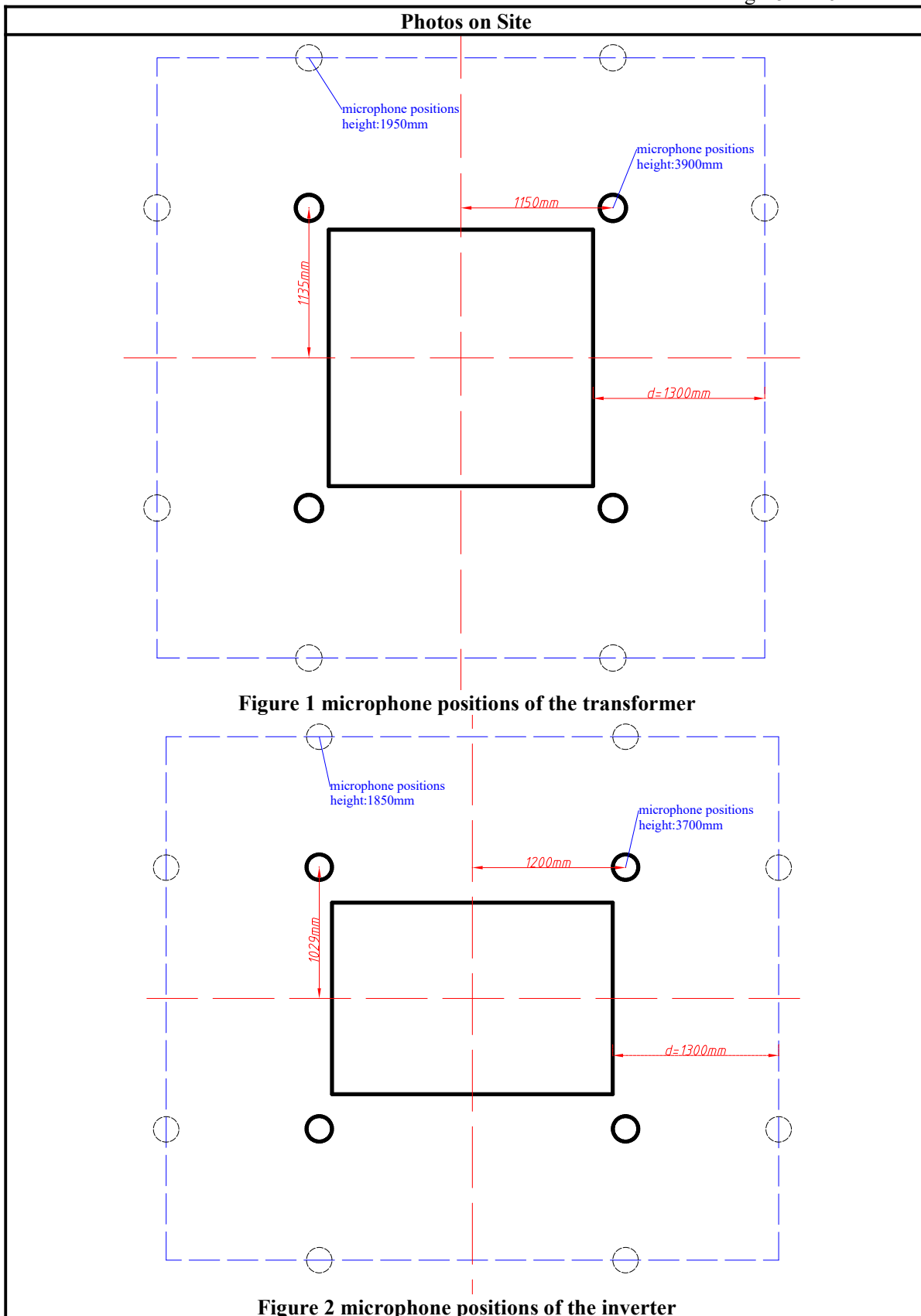
Table 5 Calculated Inverter Sound Power Level for 1/3 Octave Bands

1/3 Octave Band Center Frequencies/Hz	Sound Power level/dB	1/3 Octave Band Center Frequencies/Hz	Sound Power level/dB
20	70.2	500	85.6
25	76.2	630	80.6
31.5	81.3	800	78.2
40	82.4	1000	76.0
50	81.6	1250	74.2
63	80.4	1600	74.5
80	79.2	2000	75.0
100	80.2	2500	76.4
125	84.0	3150	74.9
160	79.6	4000	70.7
200	77.5	5000	87.6
250	80.8	6300	80.2
315	83.4	8000	73.9
400	87.0	10000	73.1

Note: Because the sound power of inverter is much larger than the value of the transformer, so the total noise of the transformer and the inverter in the test state is the value of the inverter.

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Photos on Site



Figure 3 Image of the transformer under test



Figure 4 Image of the inverter under test

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